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ABSTRACT

This handbook is intended to guide the vocational educator through the task of selecting and evaluating software for the vocational curriculum. Section 1 focuses on computer-based education. Chapter 1 defines computer-based education and the hardware and software required when the computer is used as an educational delivery system. Chapter 2 discusses strategies to integrate computer-based education into the vocational education curriculum. Section 2 describes the tasks to complete when establishing policies and procedures to evaluate and select software. Chapters 3-9 address these seven tasks: defining quality in software, planning, locating software, identifying and obtaining software to fit instructional needs, evaluating software, recommending a software purchase, and organizing software for easy access. Appendixes contain the names and addresses of such national resources as clearinghouses and information centers, state and locally funded agencies, software publishers and suppliers, publications on microcomputers and high technology, and magazines, journals, and periodicals that contain general information about microcomputers and software reviews. Sample evaluation forms are also appended. (YLB)

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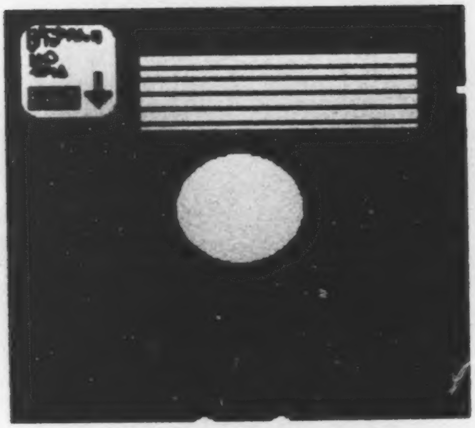

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Selecting and Evaluating Software for Vocational Education

by

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INTRODUCTION

The selection and evaluation of software for vocational education has a far reaching impact on computer-based delivery systems established within an educational institution. The way in which educators select and evaluate software will ultimately determine whether a school succeeds or fails with these innovative instructional systems. The importance of delineating the policies and formal activities which will direct selection and evaluation cannot be stressed enough. When the process is defined and controversial issues are resolved, the results will yield effective utilization of computers in a teaching and learning environment.

The selection of software is actually only one step in a lengthy process of defining values and operationalizing those values within the school, district, or department. Questions which must first be discussed and resolved include:

- What are the primary criteria for evaluating and selecting software?
- Is impact of the program on student's knowledge -or, is learning to learn, rather than knowledge itself, the mark of a quality program?
- Does the evaluation and selection process include a means for measuring the factors defined as critical?
- Is it important that computer-based learning experiences always be engaging and absorbing or, is the importance of learning sacrificed when the process of evaluating has such a strong emphasis on maintaining the engagement of the learner through nuances of the computer?

Remember, evaluation is a strange mix of pseudo-experimental design principles, values, judgement, and evaluator bias. It is an activity and process that will continue to arouse interest and controversy however it is performed.

Its impact on the entire instructional system is extensive. For example, if software is selected which requires skills not already being taught within the curriculum, then either time needs to be set aside in the curriculum to teach those skills, or the body of information taught during related courses needs to be altered.

The purpose of this handbook is to guide the vocational educator through the arduous task of selecting and evaluating software for the vocational curriculum. Much of the concerns raised during this process are similar to those which the general educator must confront. There are, however, issues and instructional components which need special attention by vocational educators due to the nature of their curricula and learning environments.

This handbook will provide answers to the following questions:

- What is computer-based education?
- What are the special needs of vocational educators?
- Which curricula should integrate the computer as an alternative delivery system?
- If I decide to use computers as a delivery system, how do I insure that the program and materials will create a quality learning experience?

- What planning needs to be completed before evaluation begins?
- Why formally evaluate software?
- What are the characteristics of quality software and how can vocational educators insure that the procedures they establish to evaluate software will recognize those factors which have been defined as high priority?
- How can copies of software be obtained for the purpose of evaluation?
- What instrument should be used to evaluate software?
- Where are software reviews written by educators?
- Once a purchase is recommended, what other tasks need to be completed, e.g., establishing a software library, teacher training?

Appendices in this handbook contain the names and addresses of national resources that can help vocational educators progress through the different stages of planning, evaluating, and selecting software in vocational education.

SECTION 1

COMPUTER-BASED EDUCATION

Should It Be Used to Deliver the Vocational Education Curriculum?

COMPUTER-BASED EDUCATION

Should It Be Used to Deliver the Vocational Education Curriculum?

This section contains chapters which define computer-based education and discuss the strategies which can be used to integrate computer-based education into the vocational education curriculum.

The emphasis in Chapter 1, **Computer-Based Education**, is on defining the hardware and courseware (software) that are utilized when the computer is used as an educational delivery system.

In Chapter 2, **Using the Computer Within Vocational Education**, the focus is on the unique role of the microcomputer as an instructional tool within the vocational education curriculum. Vocational educators use the computer in many of the same ways as general educators but they do have unique needs which can be accommodated by the capabilities of the computer. Examples of modifications made in already existing curricula to integrate the computer (such as agriculture, business education, marketing and distributive education, industrial education, and health-related occupations) are also included in Chapter 2.

Chapter 1

A DEFINITION OF THE SYSTEM

The microcomputer** is a data handling machine that stores, compares, and manipulates information. The computer system is a collection of devices that make a computer operable. A system includes:

- input devices for entering new or programmed information into the system,
- a processor unit,
- output devices to provide visual, audio or tactile evidence of information handled by the computer, and/or,
- secondary storage devices to retain and save information.

The computer performs selected functions by following step-by-step instructions which are contained in a "program" (also commonly referred to as "software," or in educational applications as "courseware"). Before the computer can perform the tasks chosen by the user, a program must be entered into its memory so that it knows how to process and what to process.

Thus there are three activities the user will engage in when interacting with a computer. They are:

1) Input - Entering a program or data into the computer's memory using the keyboard, cassette tape recorder, a disk drive and floppy disk, or a hard disk,

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**Note: The term computer and microcomputer will be used interchangeably.

2) Processing - Executing the steps of the program by the CPU and operating system, also known as the brains of the computer, and

3) Output - Receiving reports of the computer's work through a monitor or printer.

As stated, the commands for the computer come from the software. The hardware will not function until it is properly instructed by the software. There are two major sets of instruction which are actually operating the hardware. The first is referred to as the **operating system**. The operating system is contained within the processing component of the computer. It is an organized collection of software that is provided by the manufacturer and it has general responsibilities for operating the computer; i.e., it controls the physical characteristics of the computer such as the printer and the disk drives.

The second kind of instruction that the hardware needs is provided by, what is referred to as, **applications software**. This software is chosen by the user on the basis of need and it also gives directions to the computer. The applications software is actually a program written for a particular need such as scheduling classes for all high school students or completing a monthly payroll. If the user wants the computer to complete a weekly payroll, "applications software" which is designed to manipulate salaries, benefits, and deductions would be used to produce the paychecks. If the user wants applications software for a basic skills class, software would be chosen which teaches or reviews the selected competencies and learning tasks.

How Do Vocational Educators Use Microcomputers?

(Content adapted from Microcomputers in Vocational Education: Programs and Practices by Judith Rodenstein, Englewood Cliffs, NJ: Prentice-Hall, Inc. 1986)

There are three ways to use the microcomputer in vocational education.

They are:

1) **teach with it** - provide the students with instructional experiences via the computer (commonly referred to as computer-assisted instruction or computer-based learning),
2) **teach about it** - focus on how the computer works and how it is being used in society (often included in the Computer Literacy or Computer Science curricula), and/or
3) use it as a **utility** to help with administrative and writing tasks.

I. Teaching With the Computer

Computer-Based Learning (CBL) refers to the use of computers during the process of instruction. To teach, review or test with a computer, the instructor needs to choose the computer program (software) which will direct the computer throughout the instructional process, including:

- determining what information is displayed on the screen,
- establishing ways to assess user's knowledge,
- becoming familiar with the type of answers to expect from the user, and
- the means by which the program provides feedback and reinforcement.

Computer-based learning can take many forms and can be used throughout the curriculum. Before being able to select appropriate software, it is important to first categorize the various roles of the computer in instruction, i.e., define the type of instructional tasks that the computer is capable of accomplishing.

A variety of structures are used to classify and concomitantly evaluate materials. According to Dennis and Kansky (1984), the computer can be defined as a:

*Teacher

*Partner in Instruction

*or

*Aide-De-Camp

As **teacher**, the computer tutors the student. The computer uses explanations, descriptions, questions, problems, etc. to teach a new concept to the user. Often tests are included with the program, in addition to exercises which help students determine their level of mastery.

As **partner** in instruction, the teacher and the computer work as an instructional team dedicated to teaching new concepts and reviewing ideas previously taught. The teacher performs some of the instructional tasks and the computer is assigned specific instructional responsibilities by the teacher. For example, the teacher introduces long division to the class. The students then have an opportunity to practice and apply those concepts by completing exercises on a computer program. Assignment of practice exercises is dependent on the student's understanding of long division. Remedial lessons can be assigned to those who have trouble understanding the concepts. Those who have mastered the concepts can complete lessons with more advanced applications.

In the role of **aide-de-camp**, the computer becomes an instructional support system. It can be used for classroom demonstrations, word processing, data analysis, and to generate information. The teacher is responsible for instruction but uses the capabilities of the microcomputer to assist in teaching concepts and producing materials that would be difficult, if not impossible, without the computer.

A more traditional way to categorize instructional software is the following classification:

*Drill and Practice
*Tutorial
*Simulation
*Problem-Solving
*Instructional Game

Drill and Practice

In this mode the computer is used to provide exercises in a specific subject area such as math. Drill and practice exercises are useful when repetitive practice is needed. The computer is a wonderful "drill master." It provides questions and checks responses for accuracy.

A good drill is interactive, flexible, responsive, and visually appealing. Ideally, the software should be designed as a **"questioning episode"** (Dennis, 1982) rather than a series of questions randomly presented. According to Dennis, this questioning episode is actually the smallest complete unit of computer/student interaction and should be the building block of instructional computing. It consists of:

1) a question,
2) a requirement for the student to insert information,
3) provisions for computer interpretation of the student input,
4) a set of computer-generated consequences, remarks, replies, or other questions which represent feedback, and
5) a procedure for determining the duration limit of the episode.

As noted above, a good drill and practice program also puts a limit on the number of times a student can respond, thus avoiding the necessity to provide a correct answer before being able to proceed to the next question.

Another important component of a drill and practice program is the capability to analyze errors. This means that the summary of the student's performance will usually contain an analysis of the concepts and tasks which the student has not mastered. The teacher can then choose an appropriate intervention strategy which can lead to mastery of the concepts and tasks.

An example of a drill and practice program is Fish Scales by Developmental Learning Materials (DLM). This program drills the student on the concept of measurement. The student is asked to compare the sizes of various fish. The courseware gives the user an opportunity to apply a concept (measurement with a ruler) previously taught by the teacher. This program does not necessarily fulfill all the requirements of a "good" drill and practice program, but it does represent the type of software that is available to provide the extra review and practice often needed for mastery of an identified concept.

Tutorial

In this capacity, the computer serves as the instructor. The software is responsible for instructing, drilling, and evaluating the student. Prior knowledge is not assumed; the computer becomes the teacher. Students work independently and move from one lesson to the next by correctly answering questions, thus indicating mastery of a concept. These programs should incorporate both a large body of knowledge and branching techniques which will allow a student to progress at his/her own pace.

A major problem in tutorial programs, aside from the high cost of producing quality courseware, is determining when it is appropriate to intervene with hints and cues and when the student should be allowed to learn through self-discovery.

An example of a tutorial program is the Job Readiness Series from MCE, Inc. During this program the user is taught skills needed to seek and secure a job. First, new concepts are introduced and then the student completes a series of exercises and tests which assess the user's understanding of the concepts taught.

Simulation

To simulate means to copy, represent, or to assume the outward qualities or appearance of another system. Courseware that uses a simulation to instruct turns the computer into a model of a specific environment. Simulations are especially useful for learning experiences such as experiments which are difficult, if not impossible, to complete in a traditional classroom but can be simulated by the computer. An experiment that might take years to complete can be simulated by the computer in a matter of a few hours. During that time, all phases of the experiment could be observed and recorded by the user.

An example of courseware which effectively uses the computer as "an operating model of the environment" is **Heredity Dog**, published by Human Relations Media. It is a simulation of genetics at work. The program allows students to mate dogs of different coat colors and patterns. The computer produces litters of pups so that the students can study the relationship of the genotypes and phenotypes of the pups to those of the parents.

Another example of a simulation is **Heart Lab**, published by Educational Activities. The program uses graphics to produce a simulated model of a functioning human heart. A tutorial section reviews the various vessels and chambers of the heart while identifying their locations on the model. In the drill section, the computer points to specific parts of the heart on the model and the student must type in the correct name of the vessel or chamber. The Pulse Simulation Exercise demonstrates how the heart responds to work by allowing the students to enter their own pulse rates both before and after exercising.

Problem-Solving

When the computer is used during problem-solving activities, the software presents a problem to solve with the use of the computer which provides information and data to enhance decision-making. New concepts are not generally taught with this type of program but the student is required to apply previously taught concepts during problem-solving exercises.

These programs are frequently used by teachers to promote the development of higher order thinking patterns. For example, Sunburst has produced a program titled, **The King's Rule: Mathematics and Discovery.** Problem-solving skills are required in order to discover numerical rules. Knowledge of the rules allows users to work their way through a king's castle. Students generate and test a working hypothesis by asking questions, trying out new number combinations, and requesting recaps of the data.

Instructional Game

An educational game involves many activities which aim to instruct by including decision-making, competing with self or others, adhering to rules, and developing winning strategies. According to Malone (1981), instructional games should incorporate the following:

- activities built around fantasy images that are meaningful to the audience,

- knowledge that is intrinsic to the fantasy rather than added to it,
- learning activities that are embedded in a variety of play situations to accommodate different learner interests,
- activities for students of varied abilities and different motivational needs,
- changing goals as the student progresses through the knowledge base to ensure that the uncertainty of success is always maintained,
- an even balance between providing information and maintaining mystery in order to maintain curiosity, and
- feedback to encourage further exploration by providing new questions and new understandings.

An example of an instructional game is **Math Baseball** published by Educational Activities. The program is in the format of a baseball game. It provides practice in addition, subtraction, multiplication, and division. Correct answers are hits, incorrect answers are outs. The more difficult the question, the better the hit. Two students can compete or one student can play against the computer.

II. Teaching About the Computer

It is highly likely that vocational educators will spend a considerable amount of time teaching about the computer. It is fairly obvious that a Computer Technician degreed program would contain courses which examine the inner workings of the computer, but it is also becoming commonplace for all vocational curricula to have a unit which defines the capabilities of the computer. The unit could be inserted within an already established curriculum by referring to the computer as one of many work tools which needs to be understood, or it can be added as a separate computer literacy component within a curriculum.

III. The Computer as Tool for the Teacher

The management and administration of instruction also represents a primary use of the microcomputer. For example, the academic progress of each student can be monitored and evaluated with a separate utility program or through the management component of an applications program. Good software provides a component which keeps track of student progress and student time on task. The computer can be used as a word-processor, data manager, and a means to create handouts and related materials for the classroom.

Summary

The computer has many roles in education. It can be used as a teaching tool, as an object of instruction, and as a utility for teaching and learning. Now that these capabilities are understood in a general sense, it is time to review the unique roles that the computer can play within the vocational education curriculum.

Chapter 2

USING THE COMPUTER WITHIN VOCATIONAL EDUCATION

This chapter focuses on the unique role of the microcomputer as an instructional tool within vocational education. Vocational educators use microcomputers in many of the same ways as general educators but they do have varying needs which can be accommodated by the capabilities of the microcomputer. The value in computer-based learning lies in the self-paced and individualized instruction which is necessary to successful implementation of competency-based curricula and many adult education courses. In addition, the microcomputer provides the opportunity to create simulations which are not possible away from the work site, thus enabling the instructor to teach many work-related skills in the classroom when work tools are unavailable.

Competency-Based Education

"Competency-based education" is instruction that emphasizes student mastery of specific skills or competencies which a worker needs to know to be occupationally competent. The competencies are broken into a series of steps which are sequential and build upon the other. Instruction can be conducted in a traditional classroom or through individualized instruction, in which case students progress at their own rate.

Evaluation is somewhat different in a competency-based curriculum. Demonstration of competencies replaces traditional class grades. In a competency-based program, the time element varies depending on the capabilities of the individual learner, but the competencies which need to be mastered are clear and consistent across learners, i.e., all competencies must be mastered in order to proceed through the curriculum or complete the program of instruction.

According to Calhoun and Finch (1976) two major technologies must be in place in order for competency-based education to function effectively within a traditional educational setting. The first is a modularized instructional program. This means that instruction must be structured around a curriculum in the form of learning modules, thus allowing for group or self-paced instruction and testing. Modules are constructed so that individual students or groups can interact with the content and proceed at their own pace while receiving individualized instruction when needed.

The second necessary technology for the implementation of competency-based education is a management component through which the competencies can be monitored, controlled, and evaluated.

Not only does competency-based education allow students to pursue their education at their own pace and interest level, but it is also particularly suited to the open-entry/open-exit policies which permit a student to enter a program and complete training without the restrictions of the traditional calendar year.

In summary, the guidelines and goals which direct a competency-based curriculum are:

- let learners know what to expect,
- show learners what skills or information will be learned,
- provide opportunities for learners to practice skills,
- provide alternative learning strategies,
- provide open-entry to and open-exit from courses,
- measure the learner's performance at the end of each segment of instruction, and
- use the results from the program to improve instruction.

(Ofiesh, 1984)

When these guidelines and goals are applied to a curriculum, the result is a list of performance objectives (competencies). Under each performance objective, the instructor develops activities to teach the objective. This is where computer-based learning, remediation, reinforcement, testing, and assessment can be integrated into the vocational education curriculum.

The competency-based curriculum system is beginning to rely heavily on technology to individualize instruction and to provide CBE. At Fox Valley Technical Institute in Appleton, Wisconsin, computer-based learning is used in all divisions which utilize competency-based education to provide individualized instruction and testing for students. The computer is a "worksheet" for students. They enter their answer at the computer and are immediately told if they are correct. If they are not, the computer provides the answer and refers them to the lesson that should be reviewed. Exams are taken the same way. Instructors can easily monitor progress and are freed from paperwork and grading so that they can work individually with students.

To better understand how the microcomputer can enhance instruction in a competency-based curriculum, examine the characteristics used to describe quality computer-based learning. They include:

- gaining the student's attention,
- informing the learner of the instructional objectives,
- stimulating recall and assessing prior learning,
- presenting learning stimuli to teach concepts and facts,
- guiding learning,
- eliciting performance,
- providing informative feedback,
- assessing/evaluating performance, and
- enhancing retention and learning transfers.

(Gagne, Wagner, and Rojas, 1981)

It appears that the characteristics of a quality computer-based learning system are the same as those which form the foundation of a competency-based curriculum.

In summarizing the parallels between the competency-based curriculum commonly used in vocational education and the instructional programs that can be provided by quality software via a microcomputer, it is clear that the two sets of goals appear to fit from the initial step of providing information to the learner regarding the content of instruction, through the presentation of instruction, until mastery is reached. The flexibility and individually-paced nature of computer-based learning seem to go hand-in-hand with the competency-based instruction of many vocational education programs.

Enhancing the Curriculum With the Microcomputer

The technological changes represented by the microcomputer have a dramatic effect on the way vocational educators prepare their students for work. The microcomputer affects **what** is being taught and the **way** it is taught throughout the vocational education curriculum. The effects of the technology are visible in:

- the changing content of occupations, and
- changes in the vocational curriculum.

1) The Changing Content of Occupations

The impact of microcomputer technology has resulted in the need to prepare students differently for the workplace. There is disagreement over whether the impact of microelectronics will create or eliminate more jobs, but there is agreement that its impact in the workplace will necessitate changes in the training and education of workers.

2) Changes in the Vocational Curriculum

A three-pronged approach has been suggested to embody the technological changes. They are:

a) introduction of **computer** literacy throughout the curriculum,

b) **modification of existing vocational course content**, such as introducing CAD/CAM into the drafting and engineering technology programs, and

c) **training the instructor** to be an operator and manager of a computer-based delivery system.

(Zahniser, Long, and Nasman, 1983)

(Information on computer literacy and teacher training can be found in a number of textbooks and inservice packets. Modifications in existing curriculum will be briefly discussed in the following section. For more information on these curricula changes, see Instructional Strategies for Using Microcomputers in Vocational Education, Vocational Studies Center, 1985; High Technology in Vocational Education: Training Programs for Emerging Occupations, Vocational Studies Center, 1984; and Microcomputers in Vocational Education: Programs and Practices, Prentice-Hall, 1986.)

Agriculture

The microcomputer is becoming as useful to the farmer as a tractor or plow. It is the equipment that is primarily responsible for the management and operation of the farm. It stores and supplies information and is used to make management-level decisions and generate corresponding budgets.

The technology can also be creatively applied to farm operations. In the future, for example, some foresee robot arms in the milking parlors, computer technology enhancing the ability to predict weather patterns, and the computer as a regulator and monitor of plant disease.

In order for students to be adequately prepared for a career in agriculture, they need to understand the uses, capabilities, and shortcomings of the computer. At the Madison Area Technical College in Madison, Wisconsin, instructors believe there are two ways to make the necessary changes in the curriculum:

1) The student can learn a programming language and then program the computer to complete the necessary tasks.

-OR-

2) The student can learn how to use a computer with several commercially produced applications software packages.

The staff in Madison have chosen the second option. This means that students are becoming familiar with software programs which maintain farm records and develop a database of information which can be used to make management and budgetary decisions.

The key concept underlying all changes in the curriculum is to teach the students enough computer skills so that they can be flexible and versatile enough in their knowledge base to change and adapt those skills as new technologies emerge.

Business Education

Business is becoming increasingly dependent on computer-based systems. The computer is used to write, read, and search for information, file and retrieve data, mail letters, and develop reports for management decisions. Most people who work in an office will be required to interact with one or more electronic devices in order to communicate with co-workers and customers. Office personnel will need to master the technical skills needed to operate the computer-based equipment.

An exemplary program which teaches students how to operate microcomputers in the office was funded by the state of South Dakota. It enabled business teachers in the state to integrate microcomputer-based training into a "Model Office." The purpose was to teach students the skills for completing office-related tasks on the computer. The students learn to use applications software, record data, and complete tasks with that data such as a payroll. Other tasks mastered are word processing, inventory control, and bookkeeping.

Marketing and Distributive Education

The impact of the microcomputer on marketing-related occupations is extensive. The Point-Of Sale (POS) system (a computer within the cash register) used by retailers such as J.C. Penney, is an example of computer technology within sales and marketing. The POS functions include inventory and merchandise ticket generation, attendance records, commissions earned by specific workers, credit and check authorization, price searches, sales reports, markdown data, and merchandise transfers between stores. The system is designed to improve customer service by reducing time to process a sale, while also improving the efficiency of department managers and buying strategies.

The goal in vocational education is to not only understand the equipment, such as the POS system, but how the equipment and technology can be effectively introduced into any retail operation to improve upon the efficiency and effectiveness of the business. Instruction should thus be concentrating on mastery of the microcomputer as a job tool.

In a Beaver Dam, Wisconsin high school a marketing and distributive education teacher is using a spreadsheet program to prepare an income statement and inventory control system for the school store. The students are learning how spreadsheet programs can be used to manage a business.

They use formulas and sales data to understand the interrelationship between the behavior of the buyer and the job of the sales person. They also learn how to complete an income statement for the school store on the basis of data generated from the spreadsheet program.

Industrial Education

The most significant trend in manufacturing in the past decade has been the introduction and application of computerized manufacturing. The future lies in the flexible manufacturing plant which will include machining centers that can produce a variety of mechanical components by simply making changes in the programs which direct the manufacturing design. The flow of materials and the cutting/assembly functions will be directed by those who can program and operate the computer-based equipment. As a result, personnel are needed in manufacturing concerns that can work within the new industrial processes. Workers must be capable of utilizing increasingly sophisticated computer-based hardware with a minimum amount of retraining.

Curricula changes most frequently discussed in industrial education include robotics, Computer-Assisted Design (CAD), and Computerized Numerical Control (CNC).

Basic job tasks, such as working with a mill, are also being affected by the application of microcomputer-based technology. A company in California has developed a program which directly connects a numerical control machine to a mill. Previous to the use of the computer, students had to use a teletype machine for punching the holes that controlled the mill. The students would produce a punched tape but if there was a typo on the tape, they would have to retype the entire tape again. It was not possible to identify the mistake until the tape was run. Materials were wasted and creative ideas were lost. The frustration and difficulty in being 100% accurate resulted in unmotivated students who, more often than not, did not have the time to actually finish a product.

The computer revolutionizes the entire process. It has capabilities previously unavailable to the students, such as the ability to move circles and angles. In addition, the students are able to obtain a picture of the project from the plotter before the tape is actually taken to the mill for completing. At that time, mistakes are identified and easily corrected by reprogramming the computer and rechecking the sketch before using the mill.

Health Occupations

Automation and technology in the health care industry enable workers to monitor electronically-based equipment, store and retrieve patient information, generate multiple transactions without additional paperwork, and clear the path for efficient communication in an often cumbersome bureaucracy. Computers are being used at every stage of patient care, including development of a patient record which contains insurance information, demographics, and past medical history. All medical orders are added to the record throughout the patient's care plan. Lab technicians add test results to the record, pharmacists add prescriptions to the patient record, research is completed with the data, and care plans are analyzed.

Most health care facilities are large enough that they must use mainframe computers. The microcomputer, however, can be used to simulate the mainframe for the purposes of instructing students and staff on the uses of the computer within a health care facility. One training program uses software which creates a simulated hospital situation. Each terminal contains a simulated nursing unit. The user is given a list of patients and physicians on the unit. Medical orders, transfers, and discharge orders are included on the screen. Each learner is assigned a patient and doctor for the training program. The student must chart their duties on the microcomputer and, at the same time, communicate with other key care personnel through the computer.

Strategies for Integrating Technology Into the Vocational Education Curriculum

Integrating the microcomputer into the curriculum is often referred to as the second step of computer-based learning because it can only be adequately completed after teachers and staff have had time to experiment with the range of materials available for the vocational education curriculum.

The importance of selecting software can only be appreciated when there is an understanding of "software" and its importance to the entire computer-based learning system. The technical operations within the inner parts of the computer are important, but without the proper directions provided by the software, the tasks assigned to the computer-based system will not be accomplished.

According to Perry (1983), the critical concept underlying the selection and evaluation of software is the concept of "fit."

Does the computer (hardware and software) fit into the goals and objectives of the curriculum?

To "**fit**," it must be able to meet the needs of:

- the **operating system**,
- the **hardware**,
- the **applications requirements** (accomplish the learning objectives), and
- the **people** who must use it.

To insure a "fit," critical questions must first be asked:

1) Are students going to learn with the computer, learn about the computer, or both?
2) Where does computing fit into the curriculum?
3) Given the learning objectives, is the computer an appropriate delivery system to teach those ojectives?
4) If the learning objectives of the software are different from the curriculum, can you change the curriculum to incorporate a new objective that was previously difficult to teach without the computer, or will the software be discarded because it does not fit into the structure of the curriculum?

According to Shirley Chase (1985) there are six steps which can help you organize your answers to these questions. They are:

1) Identify software goals and objectives
2) Compare software objectives with curriculum goals and decide if there is a match
3) Evaluate software to determine if it "fits"

4) Develop plans and procedures for use in the classroom

   a) Fit software into the curriculum or modify the curriculum to accommodate the software

   b) Identify type of instructional activity (e.g., supplemental, alternative learning method, remedial)

   c) Identify grouping arrangements (individual, small group use)

   d) Develop introductory activities (introduction or instruction on prerequisite skills)

   e) Develop post-activities (e.g., summary, follow-up and review or evaluation and assessment)

   f) Develop supplemental student materials for courseware use (e.g., student instruction sheets)

5) Implement student use of the courseware and supplemental activities

6) Evaluate the effectiveness of the instruction and decide whether to continue the use of the courseware

To further elaborate on this model, it is necessary to briefly discuss what is meant by **identifying curriculum goals**. For example, if one goal of a business education curriculum is:

> **Students will be able to complete the procedures necessary for financial recordkeeping in a payroll office.**

One competency to master for this goal might be:

> **The students will be able to calculate gross income, deductions, and net incomes for employees paid by an hourly rate.**

The next issue of concern to an instructor is, **how will this competency be taught**?

- Is the computer (the hardware and software available) an appropriate means for teaching this objective?

- Is it an improvement upon what we have already been doing?

- If it is an improvement, **how** does it enhance instruction?

- Can the software selected also be used to effectively teach other objectives in the course?

If your answers to these questions are "fuzzy," then another route to integration is adapting course objectives to accommodate software that has been identified as particularly effective in a chosen curriculum.

According to the authors of Integrating Computing Into the Curriculum (MECC, 1985), these three potential consequences of introducing instructional computing into the curriculum are:

1) enhanced implementation

   The competencies/objectives remain unchanged but are taught with new and improved activities to help students attain knowledge.

2) modified objectives

   The competencies/objectives are modified or expanded because of the new opportunities provided by the computer's unique capabilities.

3) new objectives

   New competencies/objectives can be added to existing subject areas because the computer can now teach a body of knowledge that was not possible without a computer.

An Example - Marketing and Distributive Education

Objective with Enhanced Implementation

Students will be able to develop copy for a public relations campaign in order to introduce a new product line to the public.

Sample Activity - Using a computer and word processing software (instead of paper and pencil), the student will develop copy for an advertising campaign.

Modified Objective

Students will be able to analyze sales data and identify the interacting effects of supply, demand, money supply, employment levels, etc., on their profit margin.

Sample Activity - Students will use an electronic spreadsheet to build a model of the economic factors affecting their sales and profits. ("Modification" is in the process used and the tasks completed during this activity due to the computerization of many processes.)

New Objective

Students will be able to analyze data from a POS system and describe sales trends.

Sample Activity - Students will use the data made available from the POS system to identify reorder items which are low in inventory, review pricing policy, and classify the type of items sold during selected sales promotions.

Implementation Of These Concepts

To successfully integrate the computer into the curriculum, a teacher training program needs to be implemented which will prepare teachers and train them how to select and use the instructional materials available via the computer. Not only will instructors need to become familiar with the hardware, software, and the means to evaluate use in the classroom, but they must be prepared for the changes in the role of the instructor when a new system for delivery of information is utilized. According to VECC (1985), there are five roles the teacher can play in the classroom when a computer is used to deliver instruction. They are:

1) The teacher is basically a presenter of information in a traditional classroom, although other materials such as films, textbooks, etc. are used to supplement the role of information provider. If a computer is used to enhance the presentation of information by the teacher during a presentation, (such as a simulation or illustration of a concept) the teacher role is still that of information provider.

2) The role of the teacher changes when the computer becomes a resource for the class to use during a variety of projects. The teacher is still responsible for introducing new concepts in the classroom. The computer is used as supplementary material to reinforce, remediate, apply concepts, and/or evaluate student performance. The teacher spends a portion of the time in the classroom in the role of director and/or monitor of student interactions with the computer.

3) The computer can also be used as a tool for group projects or competitions between two opposing teams. The teacher must then assume the responsibility for preparing and evaluating student

performance. This means that the teacher introduces the activity, supervises its completion, answers questions during the activity, and evaluates the students upon completion of the computer-based learning activity.

4) Students can use the computer to learn new concepts. This usually involves "tutorial" software. The computer is the information provider in this situation and the teacher becomes the **supervisor** of instruction.

5) When the computer is the provider of traditional instruction, teachers can take on the role of **resource** person in many of the situations described above. The teacher becomes the **overseer of instruction.** This process has been referred to as the movement from "sage on the stage" to that of "guide on the side" (MECC, 1985).

Section 2

SELECTION AND EVALUATION OF SOFTWARE:

Developing Effective Computer-Based Instructional Systems

SELECTION AND EVALUATION OF SOFTWARE:

Developing Effective Computer-Based Instructional Systems

In this section, vocational educators will become aware of the tasks to complete when establishing policies and procedures to evaluate and select quality software. As a result of establishing formal policies, instructional programs will be enhanced because appropriate and effective software will be chosen. In addition, the vocational educator will become skilled in the formal software evaluation process.

The tasks discussed in Section 2 include:

- Task #1 - Defining Quality Software (Chapter 3)
- Task #2 - Planning (within the restriction of local guidelines and priorities) (Chapter 4)
- Task #3 - Locating Software (Chapter 5)
- Task #4 - Identifying and Obtaining Software to Fit Instructional Needs (Chapter 6)
- Task #5 - Evaluating Software (Chapter 7)
- Task #6 - Recommending a Software Purchase (Chapter 8)
- Task #7 - Organizing Software for Easy Access (Chapter 9)

Chapter 3

Task #1: DEFINING QUALITY SOFTWARE

The focus of this handbook is on the evaluation and selection of software but before that process begins, it is necessary to first define what we, as vocational educators, mean when we talk about "quality software."

There is nothing magical about educational software. It merely breaks learning tasks into component parts and then processes those parts by machine. Lathrop and Goodson (1983) believe that the key question to ask when defining quality software is:

> **Does this program use our equipment to meet specific curriculum needs and objectives in a creative manner that represents a good investment of instructional funds and computer time?**

In order to answer the above question, "quality" needs to be defined. According to Perry (1983), a definition should contain a description of:

1) Operating Characteristics - This refers to the methods and procedures by which the user interacts with the software. The following characteristics should be considered in a definition:
   - use of a menu to initiate action,
   - useable documentation which details the use of all program features,
   - help routines which automatically lead the user through each step of the program,
   - adequate data validation which only allows data into the system that fits the user's specified needs,

- understandable error messages which define the action needed to correct an error,
- automatic file backup insuring that data is periodically retained,
- a report generator that has the capability of changing the format, sequence and content of reports, and
- a forgiving system which retains processing information so errors are easily correctable.

2) Fulfilling the Needs of the Instructor - "Quality" is determined by the degree to which the software performs the tasks necessary for teaching selected competencies. The determination of whether a piece of software satisfies the users' needs involves a needs analysis before software is evaluated.

3) Software Support - This distinction is related to the company that created the software and should continue to support it. Before purchasing software, consider vendor reputation, training to implement and operate the program, and service when problems arise. Remember that:

a) the vendor developed the software, not the user.

b) the user operates the software, not the vendor.

c) the knowledge, however, of how to use the software must be transferred from the vendor to the user in a meaningful way.

A software package should not be expected to work flawlessly but if problems occur with the software, they are yours, not the vendors.

The components of quality software as pertains to all software will first be discussed. This will be followed by a review of variables which are critical to incorporate into the selection process of software for vocational education.

Quality Software

According to Dennis Wiser (Rodenstein, 1986), there are three broad issues which all educators must consider when selecting software. These three issues are:

1) Good software should be based on a metaphor. This means that the software should operate in a manner parallel to a system of thinking that the user already understands. For example, a filing program can actually bring a file card up onto the screen at which time information is added to the card through the keyboard. The computer then sends it back into the file box before another card is removed from the box, brought to the screen, and completed.

2) The design of the program should not encumber the user with technicalities of the design. The program should be written with the expectation that the computer will become part of the user's world rather than expecting the user to become part of the "world of computers." For example, a program written to teach keyboarding should focus on the competencies which need to be learned to use the keyboard efficiently. The user should not be required to understand a programming language in order to access the software which teaches keyboarding competencies.

3) The program should be appropriate for the audience for whom it is designed and should be able to function well even in the hands of those who have a limited grasp of how a computer should function. If a program is written to teach basic skills to an adult learner, the user should not be expected to read screenfuls of directions because the appropriate audience has problems reading. The program should not contain long, detailed directions if it is designed to teach reading skills. Not only should directions be kept at a minimum by eliminating all screens of text but childish graphics and sounds should also be eliminated from the program. Graphics can become so offensive that the amount of learning accomplished within this "environment" is diminished.

A review of the research indicates that the following features are evident in software which has led to an increase in student achievement.

1) Students have control over the learning process or, at the least, "feel" that they have control.

2) The program successfully incorporates interaction, feedback, and reinforcement.

3) Within the software students/teachers can modify or establish goals, while, at the same time, allowing for self-evaluation of those goals.

4) The program effectively uses the unique capabilities of the computer such as graphics, sound, and color.

5) The software teaches concepts which are critical to curriculum goals and also provides facts that are related to the subject matter.

6) The software is developed so that it can be easily integrated into the curriculum, either because it is designed to supplement an already existing curriculum and/or provides a strategy for teachers to integrate the computer-based materials into the curriculum.

7) The software includes recordkeeping and management capabilities and monitors student progress for the benefit of both the teacher and the student.

8) The program is easy for the teacher and student to operate and is accompanied by documentation which discusses learning objectives/goods, and includes handouts or overheads.

Specific Variables to Consider

It is often easiest to assess "quality" with a list of questions in hand when software is being evaluated. This "list" will vary according to local needs and priorities, but the following will serve as a master list of variables to include for consideration.

(The following information is adapted from Lathrop and Goodson, Courseware in the Classroom, Addison-Wesley, 1983.)

Creativity

Creative programs present information in unusual ways and generate experiences not otherwise available to the user. They usually include open-ended questions which require thought-out answers instead of a single response categorized as either a right or wrong answer.

1) Does the program present information in a manner which cannot be duplicated in a textbook or other traditional modes of presentation?

2) Is the interactive process a learning experience for the user?

3) Can students control the learning process?

4) Can the teacher control and modify the learning process for students with special needs and/or abilities?

Instructional Objectives

Quality software will always include clearly defined instructional objectives in the documentation. The manual will also contain suggestions on how to use the program to teach those objectives.

1) Does the program documentation include well-defined objectives and learning goals?

2) Are the objectives also clear to the student and do they appear to be relevant to the student's learning needs?

3) Does the program focus on a specific topic or objective rather than on a general unclear concept?

4) If the program contains many components, are they divided into clear learning segments?

5) Is the program pedagogically sound?

6) Does the program achieve its stated objectives and does it deliver what it promises?

Content

When textbooks are purchased, it is assumed that they are free of content errors and grammar and spelling mistakes. Unfortunately, evaluators cannot assume that the same kind of editorial expertise guides software development. It is still necessary to include accuracy checks when you select and evaluate software. A common error committed by many software publishers is an inaccurate estimation of reading level needed to use a particular program. For example, a publisher might state that the required reading level for the program is a 3rd grade level but, in fact, the directions for program use are written at a 6th grade level. The following questions should be considered when selecting software:

1) Does the content fit into the curriculum at the grade level for which it is intended?

2) Is the content appropriate to the interests and abilities of students at this grade level?

3) Is the vocabulary compatible with the reading level of the user?

4) Can the difficulty level of the material be adjusted so that it can reach a wider audience?

5) Does the program have instructional value?

6) Does the presentation of the materials make use of the capabilities of the computer?

7) Is all information correct?

8) Is the information current or will it become quickly dated?

9) Are all graphs, charts, and visual examples accurate and readable?

10) Are learning objectives presented in a logical sequence?

11) Can test items, word lists, etc. be modified by the teacher and/or student without an understanding of the programming language?

12) Is the content and learning style used in the software compatible with other instructional materials used in the school?

13) Is there internal consistency and logic in the design of the program, in the way the information is presented, and in the responses required by the user?

14) Does the design of the program avoid excessive competition, violence, and stereotyping?

Screen Formatting

Users should have control over the speed in which information is presented on the screen and have the ability to advance or return to a desired page.

1) Is each screen neat and uncluttered?

2) Is the amount of information displayed at one time appropriate for the audience?

3) Is the type of response needed on each screen clear to the user?

4) Does the user control the timing of screen speed?

5) Are graphics and color used effectively?

Instructions

Instructions can result in a program that is either easy to use or inaccessible. They should help the user move through the different steps of the program and assist the instructor in effective integration into the curriculum.

1) Are instructions available within the program?
2) Do instructions always appear on the screen or only upon request?
3) Are the instructions clear, complete, concise, and well-formatted?
4) Do they assume that the user is not a computer programmer?
5) Can the teacher edit the instructions on the basis of student need and ability?
6) Does the program actually operate according to the instructions?

Student Response

"User friendly" is the term which describes software that is easy for the non-technical user to operate. This means that the program is unencumbered with mechanical operations. Clear instructions and easy routines are responsible for developing a natural interaction between the user and the computer.

1) Is the routine for inputting answers consistent and easy?
2) Does the program use common conventions such as using the space bar to move to the next screen or does it use complicated responses which interrupt user concentration?
3) Is the cursor used effectively to indicate placement of response?
4) Is there an example illustrating the type of response required by the program?
5) Does the program "help" the student when the form of a response is inaccurate, or is the answer considered "wrong"?

6) Is the student given an opportunity to correct answers and/or typos?

7) Is the level of keyboarding skill required appropriate to the audience?

8) Are there alternatives to keyboard entry such as joysticks or game paddles?

9) Is the program capable of handling creative responses?

Program Response to Students

Special attention should be paid to the program's response to student input. The potential for enhancing or inhibiting learning while using a computer is directly related to the kind of reinforcement a student receives. The student should not, under any circumstances, be made to feel like a failure when an error is made.

1) Does the program provide positive rewards for correct responses?

2) After a specified amount of time on a problem, is the student prompted to make a response?

3) Does the program limit the number of incorrect responses or does it provide hints after a number of attempts?

4) Is the reward for success motivating or is it so extreme (such as, "You're a genius!!") that it seems unrealistic to the user?

5) Does the program branch on the basis of ability level?

6) Is the response to error nonjudgmental, patient and private; ie., loud sounds are not made when a mistake is made?

7) Can the student and/or teacher obtain a list of errors?

8) Do the responses use vocabulary that the user can understand?

Motivational Devices

One of the innovations available to instructors through computer-based instruction is access to a new tool which can motivate students who are often described as "difficult to reach." An assessment of these devices is critical to the software selection process. The devices used should not be showy or distracting but should improve upon instruction by using graphics and color in a creative yet pedagogically sound manner.

1) Do the graphics add to the program's ability to teach specified learning objectives by demonstrating, explaining, or clarifying the information?

2) Are the graphics randomly sequenced? Used to reward the student? Appropriate for the age level and interest level of the user?

3) Are motivational devices randomly presented or are they so automated that they do not actually respond to user input?

4) Is color used effectively to teach learning objectives by helping the student to discriminate between elements of the information taught?

5) Is sound a nuisance or a reward?

6) Can the sound be controlled?

7) Is there a personal touch in the program that humanizes the interaction between the user and the computer? (One effective way to personalize a program is to ask the student's name in the beginning of the program and address the student by their name throughout the program.)

Technical Quality

1) Is the program reliable?

2) Are there programming errors that make it "user-proof" or is it easy to "crash" the program?

Documentation

The quality of the materials accompanying the program can either add to the instructional effectiveness of the program or lead to a useless program.

1) Is there a statement of objectives, recommended grade level, estimated student time needed for completion, suggestions for classroom use, supplemental activities, and a list of prerequisite skills?

2) Are operating instructions clear?

3) Is a sample printout included in the documentation clearly labeled so that each symbol and abbreviation is defined?

4) Are sample pretests and post tests included?

5) Are materials such as maps, graphs, and student materials included and can they be legally copied for student use?

6) Is information included which lists the equipment needed to run the program?

7) Is there a bibliography of resources and references?

Although the value attached to each of the above factors will vary on the basis of local differences and unique needs, the criteria that need to be considered are consistent across grade levels and curriculum. The questions that need to be answered by an electronics teacher are often the same questions that need to be answered by a 7th grade math teacher. Because curriculum and teaching styles will vary, the answers to these questions will differ. The questions listed on the previous pages can provide the guidance and direction to those responsible for formalizing a software evaluation policy and making that policy operational.

Factors Unique to the Vocational Educator

Vocational education prides itself on teaching courses that are directly applicable to the worksite. Therefore, it is critical, when defining the selection criteria used to select and evaluate software for a vocational education program, that the variable on "applications" be included.

Discriminating questions might include the following:

1) Does the software teach the student how to use the computer as a job tool in a specific occupational area?

2) Are technical terms defined within the program?

3) Does the program not only present information but also illustrate the application of that information within a realistic work setting?

4) Does the program teach procedures that are currently being used in worksites?

5) Does the program fit into a competency-based curriculum?

6) Does the program lend itself to the open-entry, open-exit program commonly found in many vocational education programs?

Chapter 4

Task #2: PLANNING

(within the restrictions of local guidelines and priorities)

The establishment of local guidelines and priorities regarding the integration of computers into the curriculum constitutes one phase of a larger planning process that each school or district should complete. Local guidelines and priorities are established in a number of ways. One school district may rely on the school board that uses their budgetary power to prioritize and fund computer-related projects. Another district's priorities may be determined by the decisions of an interdisciplinary technology committee that establishes priorities and funds projects.

Before technology-related changes are introduced into the curriculum, it is important to understand a historical perspective of **how successful changes actually occur within your educational institution**. According to Patterson and Patterson (1983), there are three critical stages in the model of educational change. They are:

1) Planning
2) Implementation
3) Incorporation

Planning Projects Involving Computer-Based Learning

Planning involves setting a variety of activities in motion which will lead to a proposal for introducing computer-based learning into the curriculum. The first question which needs to be answered during the planning stage is, "Why a computer?" The planner, in an attempt to establish priorities and determine why a computer is needed, can survey faculty and staff to develop an understanding of the tasks the computer can complete within the curricula. Tasks might include:

- computer-assisted instruction,
- programming courses and/or software engineering,
- graphics design,
- test development and test banks,
- counseling and career education,
- word processing in English and Business Education classes,
- scheduling students and faculty,
- access to the district's mainframe computer, and/or
- library administration.

The second question that needs to be answered during the preliminary planning stages is, "In what capacity will the computer be used?" Establishing priorities not only means deciding whether to purchase computers or not, but also involves the determination of how the computer will be utilized within the curriculum. Will the computer be used for drill and practice in the math department or for advanced data analysis in a chemistry course? Will the computer be used to simulate laboratory experiments or to identify appropriate careers for graduating students?

The roles and functions identified during these preliminary stages will become the priorities of the district and eventually will dictate the kind of software that will be evaluated and selected.

To organize the activities which follow from these two core questions, it is useful to answer the following questions:

1) Who is responsible for planning?
2) How will the planner get support from staff, administration, the community, and students?
3) How will inservice training for staff be provided?
4) What is the primary use of the computer equipment?
5) What is the rationale for using computers in the proposed manner?
6) Where can this application be used most effectively?
7) What are the costs associated with this application?
8) Is this application cost-effective?
9) Where will the computer be used?
10) Where can the power supply requirement be met?
11) Who is responsible for the computer and the specific project?
12) What is the scheduling process?
13) How will planning be coordinated between departments/grade levels?
14) Have adequate security measures been defined?
15) What are the provisions for repair and maintenance?
16) What special problems will they encounter?
17) How will equal access be insured?

In summary, have you secured the necessary commitments from the resource people in your building/district such as the media/technology center, the instructional media center, department chairpersons, etc.? Do you have the funds to cover the full cost of technology, including equipment, maintenance, repair, software, and training?

Organization of a Project

Implicit in the planning stage is the establishment of a project's organizational structure. It can be defined on three different levels. The first level is the teachers who will assume primary responsibility for planning the project and implementing it within their curricula.

The second level of organization is the administrators of the institution. They can be involved in a computer-related project in two different ways. One, they can be supportive of the changes occurring at the grass roots level (at the teacher level) by encouraging them, funding their inservice training, providing time to make changes in the curriculum, and helping them search for innovative ways to use the computer in the classroom.

Administrators can also be the primary movers to enact curriculum changes. In this capacity, they not only develop and initiate but also set policies which require teachers to adapt their curriculum to accommodate the capabilities of the microcomputer. Opinions vary as to whether this is a successful way to integrate microcomputers into the classroom. The support is there and the encouragement for change is clear but teachers often need to feel that they are responsible for the details of implementation in order to feel ownership of the change. To insure this partnership between teachers and administrators, communication between the rank and file teachers and the administrators must be there from the first stages of planning.

A third level of organization is referred to by Patterson and Patterson (1983) as the "cooperative planning level." It links the users of the computer application directly with representatives from each school involved in the project. These representatives are teachers, administrators, and sometimes parents and students. They are designated as the "task force" which will make all decisions regarding integration of technology into the curriculum. The task force members are also responsible for soliciting information from their constituency and bringing the feedback to the committee for consideration. In this way, communication between all teachers who use computers and the administration that funds the projects is built into the process.

A Model for Planning

Once initial questions have been answered, a model developed by MECC (1985) can be used to structure the planning process for computer-related projects. The planning steps which can refine a project's focus include identification of the following: (See next page)

	Defined As
Philosophy	Assumptions underlying all decisions
Goals	Instructional competencies
Curriculum	The subject and level of competencies
Identified needs	Activities which must take place to meet the instructional goals
Priorities	Prioritizing and scheduling goal implementation
Resources available	Local planners, software, hardware, and training resources
Budget	Support from all available sources
Timeline	Schedule for achieving goals

A Case Study - Applying the Model

An application of this model will illustrate how local priorities and guidelines (defined by the questions on page 57) can be translated into a program which has integrated the computer into the curriculum.

This particular example is a computer training initiative that was funded through the Wisconsin Division of Corrections. It was designed to:

- develop and expand computer-assisted instruction for male and female inmates within the newly established GOAL program
- develop and/or obtain the necessary software for improving educational and vocational programs designed to increase literacy, knowledge, and skills for greater employability
- provide staff inservice for the development of technical skills and program leadership in computer-assisted instruction

- develop and provide direction for a system-wide model for computer-assisted instruction appropriate to the state of Wisconsin Division of Corrections Curriculum Plan

As one reads through the project summary, it is obvious that many decisions were made during the project to modify "gray areas"; those issues which should have been clarified during the planning process but were inadvertently left undefined. Projects should be well-planned but there should also be room left for local input throughout the life of the project.

When software was evaluated by the teachers, they were looking for several things. One, they were looking for software that they could use to either teach competencies or supplement materials in order to provide remediation, practice, or reinforcement. More importantly, they were looking for quality products that were pedagogically sound and would fit within the student's learning style and the style of materials already used within the school.

Philosophy

The intent is to give inmates as many of the skills necessary to function effectively in their environment. A systematic, competency-based approach to relevant learning experiences will:

1) enhance student's self-esteem,
2) contribute to their ability to secure and maintain employment,
3) function more fully as members of society,
4) continue to succeed in a secondary education program, or
5) access a variety of post-secondary training programs.

Goals

(Only sample goals are included in this example. They are part of the goal, Occupational Knowledge.)

- Students will be able to identify an available job that matches personal needs, interests, and skills
- Students will learn how to obtain a social security card
- Students will be able to write a letter of application
- Students will learn work behaviors and communication skills so that they will be able to keep a job once hired

Curriculum

After the goals are defined, it is then possible to examine how the computer can be integrated into the curriculum to teach those goals.

- Computers and word processing software will be used to teach students how to write and edit a letter of application.
- Students will use the computer to complete an inventory which identifies abilities and interests. With that information, they will be directed to a specific occupational cluster.
- Students will use the computer to engage in role-playing situations which review appropriate work behaviors such as communicating with co-workers, the ability to follow directions, and other experiences encountered when starting a new job.

Identified Needs

For this project, it is critical to obtain software programs with the following characteristics:

1) a focus on occupational knowledge
2) a reading level appropriate for the audience
3) specifically written for the adult slow learner
4) a word processing program which can be easily taught
5) role-playing activities which are interactive and appropriate for adults

Optional Characteristics:

- uses graphics and color as a motivator
- contains a management component to monitor student progress
- provides handouts and overheads for the teacher

Priorities

- All inmates must understand how to get and keep a job when they leave the institution.
- Related topics which cannot be easily completed without the computer, e.g., interest inventories.

Resources Available

- Federal grant
- Consultants
- Division of Corrections personnel who are familiar with computer-based learning
- Teachers who have extensive experience with computer
- Local computer dealers
- National corrections associations
- Other projects identified by Federal funding source
- University and vocational school campuses

Budget

- $60,000 received from federal grant to begin implementation through a pilot study in two correctional institutions

Timeline

Pilot study including inservice training, software evaluation, and purchasing software and hardware will be completed over a 12 month period. Final implementation across the system will occur when the new GOAL curriculum is introduced into the system.

Implementation

Implementation refers to operationalizing the planning activities of the computer-based learning project once they are funded. (It is important to remember that full scale implementation of any project usually takes 3-5 years to complete.) This is the point in the project where good planning will pay off. Can the plans be translated into action?

Patterson and Patterson (1983) believe that there are four factors which will insure successful implementation. They are:

1) **Teacher motivation for implementing the project** - The implementers of curriculum changes need to feel ownership of both the process and product. Most importantly, the teachers must have the desire to improve their curriculum. In addition, the rewards and benefits to the classroom instructor must be clear. The payoff must be more than access to the technology. It must improve upon the methods already utilized in the classroom and reduce, not increase, the workload of the instructor.

2) **An understanding of how teachers participate in implementation** - The important issue is not really if the project is implemented but how it is implemented. It is not merely a matter of whether

teachers "do or do not" implement the project. The issue goes deeper than that. Teacher participation can take many forms.

Teachers can be involved in the decision-making so that methods of implementation are realistic and become part of the official implementation plan. Or, they can take the project and make "unofficial" changes in the implementation strategy due to the fact that the decision-makers did not really understand how to customize their plans into day-to-day work assignments for the teacher.

3) The effects of the school environment on implementation - Each school environment is unique. Successful implementation is dependent upon the time, place, and the personalities involved in the process. The interaction of these forces is frequently referred to as the "school culture." It encompasses the norms, incentives, and history of the school. All of these factors impinge on the success of implementing a computer-based change in the curriculum and should not be ignored during the planning or implementation process.

For example, in each school the latitude afforded the teacher within their classroom varies considerably. If a project introduces restrictions into the instructional process, it will be resented. If it is implemented from the top down instead of from an interdisciplinary task force, it might be viewed with suspicion. By being sensitive to the "personality" of the institution, the chances of successful implementation will be enhanced.

4) The role of leadership - During the implementation process, the planners become less involved and the "implementer" becomes the leader. The implementer might be a school principal, the department chairperson, the head of instructional services, or the computer coordinator. The new leader's attitude towards the project, whether favorable or not, will be translated into the teachers' sentiment towards the proposed changes. Thus, the moral support coming from the leader is critical to the successful implementation of the project.

Incorporation

This phase of the project occurs when the change (in this case the use of computers) has become part of the teacher's and student's routine. This means that the application is now "stable." It could be enhanced in the future but will not be drastically changed nor considered a "new innovation" in the curriculum.

Chapter 5

Task #3: LOCATING SOFTWARE

Once needs are identified and priorities established, it is time to find the software that will accomplish your instructional goals and enhance the delivery of relevant information.

How will instructors find the "right" software to accomplish their goals? The sources and channels, both nonprofit and commercial, used to locate software are detailed in this chapter.

Nonprofit Sources

1) Public Domain Software

When computers were first used in the classroom, there was a dearth of software being published. Educators who wanted to use the microcomputer had to develop their own software. The software was usually made available, at a minimum charge, to other educators on a direct mail basis (from educator to educator). The materials became known as "public domain" software because they were not copyrighted and could be copied repeatedly with no penalties.

Today there is quite an inventory of public domain software available that can be obtained free from a number of sources. Many organizations of computer-using educators or computer user groups organize collections of public domain software to be used and copied by their members.

The quality of these products, however, is questionable. Some public domain software is adequate and suitable for a variety of educational environments. A number of programs are good but were developed for restricted use in a specific setting. Many programs are virtually useless. Public domain software has not been scrutinized by an editorial board or formally evaluated and is therefore unpredictable at best.

In summary, the quality of many public domain programs is uncertain. The products should not be depended upon to furnish microcomputer-based instructional support and should not be critical to a plan which is designed to integrate microcomputers into the curriculum.

2) Clearinghouses

A number of clearinghouses and information centers have been created which maintain information and resources for educators. The following information is usually maintained at a clearinghouse:

- available software
- products designed for special populations, such as the handicapped
- educational software adopted by the State Office of Education
- software evaluations
- means for modifying software to meet local needs
- public domain software
- statewide networks of computer-using educators

A list of these clearinghouses is contained in Appendix A. Three of the clearinghouses will be briefly highlighted in order to illustrate their role as an information center.

A. **The Vocational Studies Center**
University of Wisconsin
964 Educational Sciences Building
1025 W. Johnson Street
Madison, Wisconsin 53706
608/263-3696

The Vocational Studies Center is a research and development unit within the School of Education designed to meet the instructional and administrative needs identified by educators, particularly vocational educators. The functions of the Center include:

- research and evaluation studies in vocational and technical education
- the development and operation of the Wisconsin Career Information System
- disseminating information through the publication of research findings
- the development of both print and media curriculum materials
- program planning and data analysis

The Center has established itself as a leader of training and inservice instruction regarding use of microcomputers in the vocational education curriculum. Workshops and training sessions are held throughout the year and an annual conference is held for educators and administrators who are interested in using computer technology to deliver a vocational curriculum.

In addition, the Center has developed many publications and manuals written expressly to serve the unique needs of vocational educators. (See Appendix D for a complete listing of the publications which focus on microcomputer use in vocational education.)

Specifically, a Directory of Microcomputer Software for Vocational Education has been compiled to provide previously unavailable information to vocational educators. The Directory contains a listing of software programs suitable for use in the vocational education curriculum. The programs are organized into 10 major vocational areas including: Agriculture, Business Education, Career Education and Student Services, Graphics, Health, Home Economics, Computer Literacy, Marketing and Distributive Education, Science, and Trade & Industrial.

Each listing includes a brief program description, hardware requirements and the name of a supply source. The software descriptions included in this publication are primarily meant to provide information but do not explain all aspects of the program. The listings do not include evaluations of the software.

B. Educational Products Information Exchange (EPIE) Institute
Box 839
Water Mill, New York 11976
516/283-4922

EPIE is the only nonprofit consumer agency for educators. It provides objective purchasing information that can save time and money for those looking for instructional materials. Its primary mission is to promote responsible software selection by educators. (Their evaluation procedure will be discussed in detail in Chapter 7.)

The information they collect is compiled in The Educational Software Selector, commonly known as TESS. It is an annual publication which summarizes over 6500 software programs being marketed to schools and colleges for use on microcomputers. Each entry in TESS explains where the program fits into the curriculum, the hardware needed to use it, the publisher, cost, and grade level.

TESS is used most effectively once the curriculum or learning need has been identified as one which will be enhanced by computer-based technology. Using TESS, the instructor can first ascertain whether there is software currently on the market that is likely to meet the identified need. The user can initially screen the products to determine if they are compatible with the hardware, written for the correct grade levels, appropriate population, etc.

Secondly, the number of products which should be evaluated before a selection is made becomes evident from the information included. A few sample entries follow.

READING DEPTH MICROMETERS Cat. 95121 Rel. 04/83
Types: Skills pract., tutorial **Grades:** 7-12
Uses: School; for main curric.
Scope: One topic, one year. **Grouping:** Indiv., small group
Description: Teaches how to read a depth micrometer.
Average lesson is 20 minutes. No recordkeeping. Is copy protected, is list protected. Network version available.

Configuration:

1. Apple II+/IIe/IIc, 48K, 5" disk dr., Applesoft, DOS 3.3.

Components: Diskette, teaching guide

Availability: EMC Publishing (address and phone in TESS index)

$39.95 on disk

ESL PICTURE GRAMMAR Cat. 5073

Types: Skills pract., tutorial **Grades:** 5-12

Uses: School, home; for main curric.

Scope: Mult. topics, one year. **Grouping:** Indiv.

Description: Designed to teach basic grammar (using color pictures) to beginning ESL students. Student creates a sentence using a subject, verb, and object given a picture of subject and object with the verb and tense indicated. Contains cumulative test. Provides visual clues for correcting errors.

Configuration:

1. Apple II+/IIe, 32K, 5" disk dr., Applesoft, DOS 3.3

Components: Diskette

Availability: Gessler Educational Software, $49.95 on disk

C. MicroSIFT
Northwest Regional Educational Laboratory
300 S.W. Sixth Avenue
Portland, Oregon 97204
503/248-6800

The MicroSIFT Project is a clearinghouse for information about microcomputer-based educational applications. It is a project of the

Northwest Regional Educational Laboratory's Computer Technology Program. The major focus of the project is the collection of information and the evaluation of instructional and administrative applications of microcomputers for education at the K-12 level. A primary activity has been the development of an evaluation process and instruments uniquely suited to microcomputer-based instructional materials. This focus has led to the publication of the MicroSIFT Courseware Evaluation Reports. Each report is a composite of two teachers' opinions and an evaluation by a computer education specialist. They are published in sets of at least 25 reports on a quarterly basis. A description of their evaluation form is contained in Chapter 7.

The MicroSIFT Dissemination Network is a group of over 200 educational agencies located throughout the United States and Canada. Members include state education agencies, regional educational service organizations, regional educational laboratories and research and development centers, ERIC Centers, and others. Member agencies receive reproducible masters of the evaluation reports and have agreed to disseminate the reports to educators in their area at little or no cost.

Resources in Computer Education (RICE) is an on-line, searchable database developed and maintained by NWREL with the support of the National Institute of Education. The database contains both descriptive and evaluative information on microcomputer software for educational use, as well as descriptive information on educational software producers, resources for use in a computer literacy curriculum, and research and development projects which analyze the educational application of microcomputers.

Two types of evaluative information included in RICE are:

- the full text of evaluations for all programs evaluated, and
- bibliographic citations to evaluations from sources other than MicroSIFT.

Not all programs included in RICE have been evaluated, but all listings contain descriptive information. For further information on RICE, call their customer service department at (800) 833-4707.

3) Agencies Funded by State and Local Sources

Several states, such as North Carolina and California, support statewide centers which are responsible for evaluating and recommending software programs to teachers throughout their state. (See Appendix B for a partial list of these agencies.) These centers maintain copies of software for preview and publish advisory lists. These lists typically include a description and/or an evaluation of the software that has been approved by the state agency. To illustrate the role of these agencies, a summary of two of these centers follows.

A. Media Evaluation Services
North Carolina State Department of Public Instruction
Raleigh, North Carolina 27611
(919) 733-3929

The Media Evaluation Center is responsible for a diversified program which includes various services to school personnel, department staff, and other state and education agencies. They maintain a staff which is responsible for:

- evaluating instructional materials,
- publishing annotated bibliographies of noteworthy materials appropriate for grades K-12,
- maintaining collections of materials for firsthand examination in the Media Evaluation Center,
- providing consultant services on techniques for reviewing, evaluating, selecting, and organizing media,
- conducting workshops on procedures for evaluating media, and
- writing annotative critiques.

Within the evaluation program, consultants and school personnel from local education agencies review and evaluate all types of educational materials (including software) in every subject area at all grade levels. Only recent materials (those bearing a copyright of no more than two years ago) are accepted for evaluation from the hundreds of publishers and producers who formally participate in the Media Evaluation Program. A copy of their evaluation form is included in Appendix F.

Outstanding materials are called to the attention of school personnel through annotated bibliographies contained in An Advisory List of Instructional Media. Bibliographies are compiled in the following subject areas:

- Art education
- Communication skills (reading, language arts, grammar, foreign languages)

- Health, Safety and Physical Education
- Mathematics
- Media Education
- Science
- Social Studies
- Vocational Education

An example of the type of evaluation completed on each piece of recommended software follows.

Title: Enterprise Sandwich Shop: A Market Simulation
Publisher: Gregg Division/McGraw-Hill Book Company
Address: Eastern Regional Office, Princeton Road, Highstown, NJ 08520

Copyright: 1983-Apple, TRS-80, 1985-IBM
Price: $199.00
Contents of package: 1 diskette, manual
Systems: Apple II family, IBM-PC, TRS-80 Model III and Model 4
Equipment required: microcomputer, disk drive, monitor, printer
Grade level: 9-12

Contents: **ENTERPRISE SANDWICH SHOPS**, an economic simulation, provides a framework within which students observe the effects of their marketing decisions. The classroom teacher is responsible for instruction in basic economic concepts. Teams of students are responsible for applying the concepts to the operation of four small sandwich shops. The computer rapidly calculates outcomes of multiple decisions made by participants. Program developers anticipate at least two instructional periods devoted to introducing the program and to providing a suitable knowledge background for operating a small, independent business.

The teacher's manual succinctly explains several marketing variables and describes the simulation's structure. Seventeen light-hearted illustrations may be reproduced as transparencies to accompany the lectures. Topics included in the lectures and students' eventual decision-making are:

- What is the supply of and what will be the demand for each specific product?
- What type of competition exists?
- What kind of market should be targeted?

- How are advertising decisions made?
- What should be considered when selecting suppliers?
- How do you determine and budget for equipment needs?
- What are personnel salary and scheduling considerations?
- What is the extent of outstanding business loans and repayment schedule?

Students begin their activities by analyzing a printout of April's operating statement, and planning for the month of May. (The simulation starts with April and decisions can be made for each succeeding month until March. This avoids having to budget for taxes.) Student teams base their decisions on information from the two lecture sessions and from a thirteen-page student manual--reproducible from the teacher's manual.

Using a calculator (optional) to compute the recommended formulas, teams determine purchases, employee schedules, and other factors for a month's operation. This data is recorded on "Team Decision" forms and then entered into the computer, which calculates the effects of their decisions. Each team then receives a computer printout showing their analysis so they can plan an operating strategy for the next month. Instructors receive printouts that detail and rank the monthly performances of each team.

Weaknesses: For anyone other than a highly motivated student, the presentation is tedious and unimaginative. The motivation and challenge must be provided by the teacher and the participants' attitudes.

Strengths: Carefully designed printed materials help students focus their attention and force them to consider multiple variables when approaching a complex problem. Student activity is possible even when a computer is not immediately available.

Uses: **Enterprise Sandwich Shops** supplements an existing business or economics curriculum. Teachers control the extent to which it is integrated into their lesson plans. The simulation is designed to be used by at least four teams of three to five students, working together during four to twelve class periods.

Bibliographies distributed statewide include computer courseware, guidance materials, and textbooks. The bibliographies are distributed annually.

A collection of computer courseware is on display for evaluation and preview. All materials are compatible with the microcomputers purchased on state contracts.

B. TECC Software Library and Clearinghouse
San Mateo County Office of Education
333 Main Street
Redwood City, CA 94063
415/363-5472

The California State Department of Education funds the Office of the San Mateo County Superintendent of Schools to maintain a software library and clearinghouse for the California TEC Centers (Teacher Education/Computer Centers). The state of California is divided into 15 regions which all maintain a TEC Center. The Software Clearinghouse coordinates the development of an educational software preview guide which supports the activities of these 15 centers (see p. 81 for sample page from the guide).

Subject areas reviewed include:

- Art
- Business Education
- Career/College Guidance
- Computers
- Foreign Language
- Health
- Home Economics
- Instructional tools such as authoring systems, graphics generators, readability scales, spelling checkers, and word processors
- Keyboarding

- Language Arts including literature, reading, spelling, and writing
- Library Media Skills
- Mathematics
- Music
- Physical Education/Sports
- Primary/Preschool
- Problem-Solving
- Science
- Social Studies
- Special Needs
- Tests and Testing
- Vocational Education

Major goals of the Clearinghouse include:

- the development of the annual Educational Software Preview Guide which is a list of very favorably reviewed software based on the combined evaluations of 28 national, regional, and state software review projects in the U.S. and Canada
- the establishment of a cadre of software evaluation specialists throughout California to assist educators in their efforts to critically preview software being considered for purchase in the schools
- the creation of collections of new software at the TEC Centers for preview and evaluation within each region
- the collection, publication, and dissemination of classroom-based instructional software
- the dissemination of information about instructional software, including the investigation of electronic networking of evaluative data

At the Center there are a variety of software services, including:

Softswap - This **public domain** collection of 625 instructional programs for the Apple, Atari, Commodore 64, IBM, PET, and TRS-80 may be previewed and copied without charge in the Microcomputer Center. All programs were donated to SOFTSWAP by educators and have been edited by volunteers at the Center. SOFTSWAP programs are available at all 15 TEC Centers in California.

Commercial Software - Commercial software is available for preview and evaluation by educators. Ordering information is available. Commercial software is not sold at the Center but an example of an evaluation from the 1985 Educational Software Preview Guide follows (see Figure 5.1). The guide was developed by the Educational Software Evaluation Consortium at the California TECC Software Evaluation Forum, Menlo Park, California.
(**Please note:** In the Vocational Education section, it was noted that "none were selected.")

4) User's Groups

A user's group is an association of people who meet and exchange information about particular computers, programs, and the capabilities of selected equipment. They represent a means for the free or inexpensive exchange of computer software among a large number of users. The maintenance of these organizations is usually dependent on the free will contributions of the members.

BUSINESS EDUCATION - TYPING

TITLE	PUBL	COMPUTER	MODE	K-3	4-6	MID	SEC	TCR	PRICE
ALPHABETIC KEYBOARDING BEGINNING THROUGH INTERMEDIATE EXERCISES TO INTRODUCE KEYBOARD; INCLUDES DRILLS & TIMED DRILLS	SW PUB	AP	DP.TU		Y	Y	Y		89.50
BANK STREET SPELLER SPELLING CHECKER FOR BANK STREET WRITER; INSTRUCTIONAL MATERIALS INCLUDED	SCHOLASTIC	AP	SK	Y	Y	Y	Y		69.95
BANK STREET WRITER WORD PROCESSOR WITH TUTORIAL; INSTRUCTIONAL MATERIALS INCLUDED	SCHOLASTIC	AP.AT.CO.IB.JR	WP	Y	Y	Y	Y		95.00
SENSIBLE SPELLER IV CHECKS DOCUMENTS FOR SPELLING AND TYPING ERRORS; COMPATIBLE WITH MANY APPLE WORD PROCESSORS	SENSIBLE	AP	SK		Y	Y	Y	Y	125.00
TYPING TUTOR INSTRUCTION ON FINGER PLACEMENT; DRILL ON SPEED AND ACCURACY	MICROSOFT	AP.TR	DP.TU	Y	Y	Y	Y		24.95
TYPING TUTOR (IBM) INSTRUCTION ON FINGER PLACEMENT; DRILL ON SPEED AND ACCURACY	IBM	IB.JR	DP.TU	Y	Y	Y	Y		25.00

MATHEMATICS - ARITHMETIC

TITLE	PUBL	COMPUTER	MODE	K-3	4-6	MID	SEC	TCR	PRICE
COMPUTER GENRATD MTH V.2 PROVIDES WORKSHEETS OR TESTS FROM 236 OBJECTIVES INCLUDING BASIC FACTS, COUNTING, AND ESTIMATION	MECC	AP	DP,IM,PS		Y	Y			45.00
COUNTING DRILLS BEGIN WITH SIMPLE NUMBER PATTERN RECOGNITIONS AND PROGRESS TO COUNTING IN SETS OF 10	MECC	AT,CO,TC	DP	Y					46.00
DECIMAL SKILLS PRACTICE IN PLACE VALUE, NAMES AND NUMBERS, COMPARING, ORDERING AND OPERATIONS WITH DECIMALS	MILT BRAD	AP	DP		Y	Y			49.95
DEMOLITION DIVISION DIVISION DRILL IN ARCADE GAME FORMAT; SEVERAL LEVELS OF DIFFICULTY AND SPEED AVAILABLE	DLM	AP,AT,CO,IB,TI	DP,EG	Y	Y				44.00
DIVIDE FRACTIONS STEP-BY-STEP PROCEDURE FOR DIVISION OF FRACTIONS	CBS	CO	DE,DP		Y	Y	Y		24.95
DIVISION SKILLS MANAGEMENT AND TUTORIAL ON DIVISION WITH ONE-AND-TWO-DIGIT DIVISORS	MILT BRAD	AP	DP	Y	Y	Y			49.95
DRAGON MIX USERS PRACTICE DIFFICULT MULTIPLICATION AND DIVISION PROBLEMS IN AN ARCADE GAME FORMAT	DLM	AP,AT,CO,IB	DP,EG	Y	Y				44.00
EARLY GAMES F YG CHLDRN NINE GAMES TO PRACTICE NUMBER RECOGNITION, COUNTING, ADDITION, SUBTRACTION, SEQUENCING & MATCHING SKILLS	SPRINGBOARD	AP,AT,CO,IB,TC	DP,EG,PS	Y					34.95

VOCATIONAL EDUCATION/INDUSTRIAL ARTS

TITLE	PUBL	COMPUTER	MODE	K-3	4-6	MID	SEC	TCR	PRICE
NONE SELECTED									

The 1985 EDUCATIONAL SOFTWARE PREVIEW GUIDE was developed by the Educational Software Evaluation Consortium. The GUIDE is designed to assist educators in locating software for preview. It is not intended to endorse these products for purchase without examination. ©1985 California State Department of Education.

Local vendors often contact user's groups when they want to demonstrate an innovative program or peripheral. User's groups sponsor monthly meetings, newsletters, special publications, software libraries, electronic bulletin boards, educational programs, and other services which illustrate how to get the most out of a particular computer. In most communities, there is an IBM-PC or an Apple User's group. There might also be an Atari group or a Commodore group in geographic areas where these computers are sold extensively.

5) Local Universities, Colleges, and Technical Institutes

Local universities, colleges, and technical institutes are an excellent resource for vocational educators. They often maintain software libraries in their School of Education, schedule classes which focus on educational computing, and plan conferences and workshops which analyze the uses of microcomputers in education.

The University of Wisconsin microcomputer laboratory is a good example of a resource which maintains a wide variety of software, training programs, and formal classes. At the School of Education Microcomputer Lab there are several computer classrooms arranged as work stations for teachers and students. The instructor station has two special demonstration aids including large screen monitors and graphics tablets, and over 70 software packages which can be used to teach about word processors, educational software, data bases, and spreadsheets. As a participant in this facility, an instructor can learn how to use a variety of software programs and also learn how to teach a group of students using computer-based delivery systems. The lab also provides a good opportunity to evaluate software both independently and in a formal instructional setting. Other classes that utilize the microcomputer lab focus on programming, graphics, and the use of telecommunications equipment.

In addition to the School of Education Lab, a Microcomputer Information Center is maintained within the Computer Science Building. The Center maintains a collection of hardware, software, and journals to help faculty, staff, and students choose hardware and software to suit their needs. An outlet in the same building sells equipment but the Center only provides information and equipment to preview. For example, if a staff member wanted hardware and software for desktop publishing, they could speak with Center staff and experiment with a variety of software and hardware alternatives before selecting a system.

Micro Short Courses are offered to introduce the user to the capabilities of the microcomputer and to provide extensive hands-on experiences with a variety of software such as Lotus 1-2-3 and dBase III for a small fee.

Commercial Sources

1) Public Corporations

Several agencies have been established over the past decade which are non-profit, yet do develop and sell their own software. From the consumer's point of view they compete for software dollars in the same manner as a commercial publishing venture. Examples of these agencies are the Educational Testing Service (ETS) and the Minnesota Education

Computing Corporation (MECC). The focus of MECC is educational computing and teacher training. A brief description of the services offered through MECC follows.

MECC
3490 Lexington Avenue North
St. Paul, Minnesota 55126
612/481-3500

MECC was established in 1973 and provides direct service to Minnesota schools and colleges in educational computing. MECC continues to provide statewide leadership in instructional computing for K-college. They are not only a source of software and evaluation materials, but also provide current information about using computers in schools. MECC provides a variety of service to educators, including:

1) development and distribution of computer software
2) inservice training for educators and development of materials for conducting training
3) educational computing assistance through newsletters and computer purchase contracts
4) management information services including the development and maintenance of statewide payroll/personnel and financial accounting software and administrative computer packages

MECC is one of the few agencies where educators are integrately involved in producing software. Evaluation of their software is an essential ingredient to the process but is not the primary purpose of their existence. Generally, they do not publish evaluations of their software.

MECC offers a unique licensing arrangement whereby nonprofit educational organizations can obtain MECC courseware and training products at substantially reduced prices. These licenses are granted to institutions, individual school districts, cooperative service centers or regional centers, and state/provincial Departments of Education. The licensed institution may obtain MECC courseware at special prices and distribute the support manual and diskettes to its clientele.

An example of the software developed by MECC follows:

Writing an Opinion Paper - This program helps students become more persuasive writers by illustrating the difference between fact and opinion and recognizing the importance of supportive evidence in writing.

The Electronic Spreadsheet - Although many schools want to teach students how to use programs like Visicalc, there are few programs available which are designed to teach the capabilities of spreadsheets. In this program, business students can learn how to do anything they would normally do on the traditional accountant's worksheet. Included are tutorials and exercises on using an electronic spreadsheet system for use in consumer economics, recordkeeping, bookkeeping, and office management courses.

Exploring Sorting Routines - This program is designed for use in programming classes as a means of exploring and comparing methods to sort lists of data. Animated graphics visually demonstrate how different sorting routines work. As students investigate the routines, they decide for themselves which methods are most efficient for sorting various types of data.

Examples of training materials follow:

MECC Computing and Information Teacher's Guide - This package shows how the **Computing and Information** programs can be used as a course in computer literacy or information processing. It identifies objectives and details specific plans for using the various packages in different types of instructional sequences. It also features a set of student activity cards that provide student-centered classroom exercises for use with each package in the collection.

Integrating Computing into the Curriculum - This manual provides instruction on the processes and issues involved in integrating computer use into the school curriculum. The course is designed for those who are familiar with computer use and are concerned about the impact of computing on the curriculum as a whole. Topics of concern are presented in four areas:

- computing to achieve traditional curriculum ends,
- computing as a new curriculum topic,
- effective classroom use of computers, and
- the overall school curriculum-planning process.

Computing Tools: Databases - Participants learn about the capabilities of database systems to store, organize, and retrieve information, making large amounts of data much easier to handle. It is used with MECC's **Data Handler** to teach "how to teach" the database activities.

2) Software Companies and Distributors

Schools are not known for implementing change in a rapid manner, however between 1983 and 1985 the number of computers in elementary and secondary schools has quadrupled from approximately 250,000 to over one million. Approximately 15 million students and 500,000 teachers used computers as part of their schools' instructional programs. As a result, a new industry has sprung up to serve the needs of these schools. There are two types of businesses which can provide software to the vocational educator.

The first, and the more traditional type of company, is one which develops and sells their own software. Literally thousands of companies have been born within this industry. Some have come and gone rather quickly, while others have successfully carved a niche in the market. Some of the more popular companies are Educational Activities, Sunburst, Hartley Courseware, and the Learning Company. These companies seem to have identified a subgroup of students to serve or have identified a particular problem to solve. By consistently developing quality products, they have become identified as the resource to serve a specified educational need.

It is difficult for the consumer to readily identify the goals of each company. The easiest way to understand each company is through communicating with colleagues who have worked with software companies before to determine which software companies best serve the special needs of the students that you teach. (For a list of many of the companies/distributors, with their addresses and phone numbers, see Appendix C.)

To illustrate, **Educational Activities, Inc.** in Freeport, New York has developed a series of programs for the adult learner. Many of these programs are used to teach basic skills such as reading, writing and survival skills, such as the CORE Reading and Vocabulary Development program. This program was developed by two reading specialists especially for older students (ESL, L.D., and Slow Readers) who have an interest level from junior high through adult but a reading level that is pre-primer through third grade.

Students begin the program with 35 basic words and then progress to over 200 words through a variety of activities. The program has an optional speech component which pronounces featured words for each lesson. This component is not essential but it enhances the program, especially for ESL students.

Educational Activities has developed a variety of programs which serve this population such as:

> **Dilemma** - A Reading Comprehension and Vocabulary Development Program written for those with reading levels at 2nd-5th grades and interest levels from junior high through adult. Stories include subjects such as Child Abuse, Stepparents, Quitting School, and Drugs.
>
> **Measuring With a Ruler** - Teaches students how to read a ruler and measure various sized objects; understand the concepts of perimeter, circumference, and area. It is written for junior high through adult students and is especially useful with those who have deficiencies in the basic skills.

The Regents/ALA Company in New York City develops courseware for teaching English as a Second Language or Foreign Languages. Their language-learning courseware is designed for a variety of ages and ability levels.

Examples of programs include Essential Idioms, Vocabulary Mastery, Grammar Mastery, and Word Alert Game Collection.

The second type of company that has sprung up is the software distributor. These companies do not usually develop their own software but they sell software developed by others. This includes software authored by an individual or by a small company that cannot afford the extensive advertising that a distributor can provide. Educators often prefer ordering software from these companies because they can see a list of the available products in a single catalogue and then select the best of the materials listed. It is easier than searching through a few dozen catalogues to identify materials available to teach a particular topic. Schools often prefer ordering software through a distributor because they can place one order with the distributor instead of numerous orders with many small companies.

The distributors select what they believe is the best software. They rely upon evaluations such as those completed by The NEA, Digest of Software Review, Courseware in the Classroom, The Discriminating Software Guide for preschool-Grade 12, and Classroom Computer Learning Software Award Winners, as well as published reviews in Electronic Learning, Teaching and Computers, Classroom Computer Learning, and Booklist. They do not, however, include their own evaluations in their catalogue. Therefore, one cannot assume that these are excellent products just because they are listed in the catalogue. The distributors do attempt to make selections based on quality but it is not possible when reading their catalogue to determine how stringent or important their evaluations are in selecting their products.

Software available from distributors is usually classified by subject area and hardware. A typical table of contents might cover the following topics:

- Computer Literacy
- Reading and Vocabulary
- Problem-Solving
- Creativity
- Teacher Utilities and Study Aids
- Math
- Language Arts

Examples of distributors are K-12 MicroMedia, Career Aids, and Follett Software Company.

3) Publishing Companies

Many large publishing companies have divisions whose sole task is to develop instructional materials for the microcomputer. This includes publishers such as Random House, McGraw-Hill, Addison-Wesley, South-Western, Houghton Mifflin, and Holt, Rinehart and Winston. When textbook publishing companies develop software, they have the capability to not only develop software for specific curriculum, but they can design software specifically to be used with an already-purchased textbook. For example, the program, **Automated Accounting for the Microcomputer** by South-Western Publishing Company is an integrated automated accounting package providing instruction in general ledger, accounts receivable, accounts payable, and payroll. It is designed to be used with the textbook, Century 21 Accounting.

Unfortunately, not as many publishers as would be expected have bothered to link their software to their textbooks. It seems like a natural and profitable relationship but the publishing companies are slow to pick up on the advantage they have over a company which only produces software.

4) Local Stores

Computer stores are good sources for hardware and peripherals but offer minimal software resources. It is possible to use the stores to preview the types of software that particular companies produce but avoid finalizing selection decisions based on the inventory at a local store without first previewing a variety of materials available through the previously mentioned sources.

Journals and Magazines

There are many journals and magazines which focus on the use of microcomputers in education. They contain articles on innovative ways to integrate the microcomputer into the curriculum, new hardware and peripherals, innovative software products, and most importantly, evaluations of software by educators. These publications provide most of the information needed to select and evaluate software.

Unfortunately, there is not a publication which focuses on the needs of the vocational educator, but there is information in the journals and magazines written for the general educator which can provide the necessary information. A list of these journals is included in Appendix E.

Chapter 6

Task #4: IDENTIFYING AND OBTAINING SOFTWARE TO FIT INSTRUCTIONAL NEEDS

As noted in Chapter 5, there are many resources available to assist in the identification of software for a specified purpose. This chapter contains hints and reminders to help you obtain and evaluate the best software that is available. Remember, a few hours invested asking the proper questions and prioritizing selection criteria can make the difference between searches that are successful and those that are futile.

(Please note: Companies' preview policies have recently become more restricted so you will need to become more creative in your attempts to preview software. Here are a few tips to aid you in your endeavors.)

Identify Priorities

Once again, it is important to not only identify your priorities but also to be sure that they are also the operating principles and structure of your evaluation procedures. As you begin to enumerate your priorities, be sure you have completed the following:

- Determine your goals
- Pinpoint which parts of the curriculum will be taught via computer
- Decide whether the microcomputer is suited for the educational tasks that need to be completed
- Reiterate the teaching techniques you want to use to reach those goals

- Determine who (teacher, students, administrators) will use the program
- Is the program matched with the goals and expectations of the learning environment?
- Can the program be easily incorporated into a variety of learning situations?
- Determine which features of the computer will be used to enhance presentation of learning materials
- Familiarize yourself with all available hardware
- Decide how the instructor will be involved with the computer, i.e., as a supervisor? as the instructor? or not at all?
- Will using the computer directly affect the achievement of learning goals and expectations?
- Is the program easy to use?
- Is the program cost-effective for the average school and classroom?

Once these issues are defined, there are two problems for the vocational educator to solve. One is to identify all available candidates (software programs) which accommodate your priorities. The second is to minimize the amount of time spent selecting and evaluating software.

In order to illustrate how software can be identified and obtained for preview (and eventual purchase) the procedures used to identify and select software for a project within the Division of Corrections in the state of Wisconsin will be described. It will serve to point out the barriers and solutions that a vocational educator might face when they complete a similar project.

A Sample Program - Computer Training Initiative

Division of Corrections - State of Wisconsin

The Division of Corrections in the state of Wisconsin received a grant from the National Institute of Corrections, U.S. Department of Justice, to develop a Computer Training Initiative in selected prisons within the adult corrections system. After the computers were purchased, the Vocational Studies Center, a research and development unit in the School of Education at the University of Wisconsin became responsible for:

- developing computer-assisted instruction as a supplemental mode to regular classroom experiences, making it possible for the instructional staff to meet individual needs at different levels of achievement.
- obtaining the necessary software for improving educational and vocational programs designed to increase literacy, knowledge, and skills for greater employability.
- providing staff inservice programs for the purpose of developing technical skills and leadership in computer-assisted instruction.

A final goal of the project was to develop and provide direction for a system-wide model of computer-assisted instruction appropriate to the State of Wisconsin's Division of Corrections curriculum plans.

Activities Which Led to Selection of Software

#1 Met with the educational staff at the pilot sites to determine goals in line with the major learning objectives and activities within the GOAL curriculum.

Several meetings were held with the Division of Corrections Program Services staff and the teachers who would be using the microcomputers at the pilot sites. During those meetings goals were defined and priorities were established. A new curriculum, the GOAL curriculum, was being introduced into the schools to teach basic skills and survival skills. That included not only reading, writing and math, but job seeking skills, budgeting, health maintenance, becoming familiar with legal resources, and becoming a respectable citizen, parent and/or worker.

#2 Searched for software

Project staff were familiar with the resources available for locating software (see Chapter 5). Names of individuals working in prison schools with microcomputers were contacted by telephone to determine the progress being made in the field and to discover which companies developed products which were appropriate for this particular population. The recommendations of others who had already embarked on a similar task provided a solid start to the research.

In addition, catalogues were ordered from these companies and others that claimed to market software written for the adult student who had learning problems. Conferences were attended where the software could be previewed. It was found that certain companies actually had "personalities" which were reflected in their products. The companies which had software appropriate for this population were identified. Those companies which were serving other populations were eliminated from the preview list.

#3 Developed an understanding with a local distributor

A decision was made early in the project to work through one distributor who had access to most of the software companies that produced software for adults in basic skills and survival skills. The primary criteria for choosing a distributor was: 1) they had the capability of ordering software for preview, and 2) they maintained a facility where software could be previewed.

The informal contract with the distributor stated that all the ordering, bookkeeping, and shipping would be completed by the distributor. The project staff committed themselves to ordering all software from the distributor. The project staff assembled lists of software compiled from directories, journals, resource people, and brochures. These lists were sent directly to the distributor who took care of ordering, shipping, etc. When the software arrived, staff members previewed the software at the distributor's facility. If it looked appropriate, it was set aside to be evaluated by the teaching staff at one of the pilot sites during an evaluation workshop. All software which did not measure up to our standards was returned at that point. Teacher time was not wasted evaluating the bad products.

At the end of the project, the distributor charged a minimal fee for the mailing and shipping costs of the software that had been ordered for preview but returned to the publisher.

There were several companies that did not work through the distributors, so project staff had to contact their marketing staff directly and explain the project and the need for a 30 day preview period to properly evaluate the software. All companies agreed to supply the software for that period of time.

#4 Vocational Studies Center staff completed preliminary evaluations of software to eliminate those products that were inappropriate

An evaluation form was created for evaluating the software for this project. (See Appendix F for the form.) Included in the form were both a checklist and a section containing open-ended questions. The form was designed to serve two purposes:

1) to gather data from the teachers which reflected their interest in purchasing the software or their desire to send it back to the publisher, and

2) to establish guidelines for the evaluators so that they would focus on high priority factors such as graphics, support materials, and instructional design while they were evaluating the software. This insured that they would be active rather than passive evaluators who attended to the components that they had defined as priorities and needs.

When the software first arrived, the project staff evaluated the software with the formal evaluation form. The purpose of this "pre-evaluation" was to determine which software was worth the teachers' time to evaluate. The software was either written for a different audience, was of low quality, contained errors in the content, did not fit into the curriculum, or required hardware different from the configuration available in the schools, was not taken to the teachers for evaluation. It was immediately returned to the publisher. The remainder of the software was taken to the evaluation workdays and reviewed by the teachers.

#5 Provided inservice education for teachers at the pilot sites

Project staff were responsible for developing an inservice plan for the teachers who would be using the computer to teach selected competencies. The staff development activities were to serve two types of teachers. Many of the teachers at both institutions were at an intermediate level in their use of the microcomputer in education. They had taken several literacy courses and attended conferences on the uses of computers in education. For this group, several activities were implemented which:

- provided them with exposure to new products in the field of microcomputers in education, particularly vocational education and basic skills.
- taught them the process of evaluating software. Although the staff had some experience with the microcomputer, they had a history of purchasing software which was useless within their curriculum and with their particular type of students. They wanted to develop and formalize evaluation standards which reflected their unique needs and priorities.
- helped experienced teachers examine options for integrating particular software packages into the COAL curriculum. The teachers determined which competencies could be taught with particular software packages and discussed how they could best be used within the classroom setting. They also discovered that many of the tasks were best taught with textbooks or community-based materials that portrayed the current status of resources in the local communities.

#6 Scheduled a computer literacy workshop for teachers

During this workshop, the computer was introduced to those teachers identified as "beginners." Included were definitions of the computer-based learning system, a hands-on experience to teach them the features of the Apple IIe, and the many uses of the microcomputer in education (both in instruction and management). After software was used to illustrate the different ways the microcomputer could be used, a hands-on experience with Bank Street Writer was introduced. Word processing exercises were completed. The teachers then learned how to evaluate software for their curriculum.

#7 Held 4 evaluation workdays when approximately 175 programs were evaluated by the teachers

Four evaluation workdays were scheduled so that the teachers would have the opportunity to formally evaluate the software being considered for purchase. During those days, the teachers were relieved of their regular duties. They met in a lab which contained approximately 15 Apple IIe microcomputers.

Whatever software had been received from the publishers was brought to the workshops. In addition, there were several software libraries in other correctional facilities and they sent their software to be evaluated during this project.

The first evaluation session was spent reviewing the form and using it to evaluate software. During the remaining workdays, teachers evaluated software for the entire day.

When possible, teachers broke up into teams of two so that they would be able to discuss the software as they evaluated it. That seemed to work well for the teachers and enhanced the coordination of the evaluation workdays. By doing this, the teachers did not tire as easily. They took turns completing the forms and did not feel as though their entire day was spent staring at a computer. Being in a team of two also encouraged discussion of the merits and problems of various components included in the software.

It was the goal of the project to complete at least two evaluations, by two teams, for each piece of software. The staffs at the two prisons in the pilot study worked with different types of students. Therefore, it was also important to have staff members from each institution evaluate each piece of software whenever possible.

It became quite obvious that there are certain learning tasks for which software just had not been developed. Usually the reading level of the software was not low enough for the students. This was especially true in the Government and Law curriculum.

The teachers expressed satisfaction with the experience. They not only became more literate with the microcomputer but were able to observe the range of instructional applications available to them. They learned how to evaluate and could compare two or more programs which taught the same subject with different approaches. The process generated quite a bit of informal discussion among the teachers, a phenomena that did not frequently happen in their normal workday.

#8 Purchased the software that was recommended and developed strategies to integrate it into the curriculum

The software which received high ratings on the evaluation forms was purchased with the designated monies. The teachers decided to hold some monies aside to either buy duplicate copies of the software which was well-received by the students, buy an administrative program such as Appleworks, or buy the software which was rated on the evaluation form, "with reservations."

#9 Completed a post-evaluation of the software in the classroom

The second stage of the evaluation process involved the formal evaluation of the software as it was being used in the classroom by the inmates. The following form (pp. 103-105) was designed to gather information which focused on:

1) preparatory activities by the teachers,
2) evaluation of the student's involvement with the materials,
3) the type of student who should/should not be using the software, and
4) recommendations for the purchase of multiple copies.

#10 Recommended software that was found to be useful in an adult correctional institution's basic skills program

A report was written at the end of the project which contained the list of software evaluated, software purchased, and the results of the post-evaluations. For more information on this report, contact the Vocational Studies Center.

Used in WI Div. of Corrections
State of WI, 1985-86

Post-Evaluation Form

IS THE SOFTWARE USEFUL IN YOUR CLASSROOM?

Teacher's Name and
Institution: ____________________
Course Title or Class Description: ____________________
Name of Software Program: ____________________
Publisher: ____________________ Intended Grade Level (from manual): ______
Type of Software (check all that are appropriate):
___ Drill and Practice
___ Tutorial
___ Simulation
___ Game
___ Problem Solving
___ Other (Explain) ____________________

Enter the Menu (Put a check mark by those items evaluated on this form. There is not an expectation that you will be able to evaluate the use of all items on the menu.)

___ 1. ____________________
___ 2. ____________________
___ 3. ____________________
___ 4. ____________________
___ 5. ____________________
___ 6. ____________________
___ 7. ____________________
___ Management Component (if available)
___ Authoring Component (if available)

(Please Check:)

Usage:
___ Remediation
___ Standard instruction
___ Enrichment
___ Reinforce
___ Introduce a new idea
___ Review
___ Motivate
___ Test or Assess

Instructional Group
___ Individual ___ Group ___ Class

Length of Time Spent on Program (measurement of attention span)

Approximate time for one sitting: ____________

Approximate time allotment to cover each component: (Be sure to include each item listed on the menu at the top of the page.):

MENU ITEM	LENGTH OF TIME SPENT Student 1	 Student 2	 Student 3
1.			
2.			
3.			
4.			
5.			
6.			
7.			

MANAGEMENT FOR EACH STUDENT ____________________
AUTHORING FOR ONE LESSON ____________________

Evaluating Classroom Use

The following information will be avilable to other teachers who are considering use of this program in their classroom..(Use this section to let the reader know what instructional tasks you completed before, during and after using the software.)

Teacher Involvement
Preparation:

Usage (please include whether a tutor was necessary):

Summary:

Student Involvement (Use this section to describe how the student responded to the software.)

STUDENT 1 Reading/Grade Level (from student file):____
Preparation:

Usage:

Summary:

STUDENT 2 Reading/Grade Level (from student file):____
Preparation:

Usage:

Summary:

STUDENT 3 Reading/Grade Level (from student file):____
Preparation:

Usage:

Summary:

Is there a particular type of student that can use this software more effectively?

Check all appropriate answers:
___ ESL
___ Special Education
___ Low Functioning
___ Low Motivation
___ Other: ____

Can you anticipate the type of student who would not be able to use this software?

Check all appropriate answers:
___ ESL
___ Special Education
___ Low Functioning
___ Low Motivation
___ Other: ____

Should we order more copies of the software? ___Yes ___No
If yes, how many more for your institution? _______

ADDITIONAL COMMENTS:

Please return to your Education Director when completed. It will then be forwarded to Judy Rodenstein. Thank you for your cooperation.

Barriers and Solutions

The problems encountered during the project were largely due to the inadequate supply of software for the task at hand. Finding software written for an adult audience at a low reading level was a difficult task. In addition, the software had to fit a structured curriculum in order to be considered for purchase. Although there is software to teach many of the tasks, the problems inherent with capturing the interest of low-motivated, uneducated adults, can at times seem insurmountable. Identification of appropriate software was difficult. Finding quality software was arduous.

Sometimes the teachers settled for software that did not quite meet their standards. Other times they opted for using textbooks and conventional means of delivering instruction. That alternative became more palatable after evaluating numerous pieces of software that just did not meet with established standards.

The post-evaluations revealed new insights into what actually "worked" with students who have had repeated failures in school. These discrepancies serve to emphasize the importance of including a "post-evaluation" component into any evaluation project. The data collected in the classroom should be a major component under consideration when determining what software should be purchased for instructional purposes.

Chapter 7

Task #5: EVALUATING SOFTWARE

There are many ways to evaluate software but according to Henry Olds, all forms of evaluation should incorporate the following concepts:

1) The primary function is to inform others. Be sure you have an opportunity on the form to describe the contents of the program.

2) The evaluation should be qualitative, not quantitative. Rating scales should be kept to a minimum so that the evaluation does not get lost within the numbers.

3) The evaluation should be timely, i.e., evaluate when you are going to use the courseware instead of as an isolated activity. The evaluation should be looked at as one of many steps towards integrating the microcomputer into the curriculum.

4) An evaluation should always leave room to compare the program with others of a similar type, orientation, and price.

5) An evaluation should always point out the portions of the program design that can be altered by teachers and distinguish them from those portions which are permanent parts of the software.

The Process of Evaluation

Most people assume that the process of evaluation merely involves completing a form while viewing the software. Before the evaluator even picks up an evaluation form, there are several tasks that should be completed.

First, it is helpful when reviewing software to first read the manual to build an understanding of the overall picture of the objectives, goals, and "flow" of the software. The second step in the process is to quickly go through the menus to obtain a mental diagram of the contents of the program and how various components can be accessed.

After this informal overview, it is time to progress through the program as if you were a student. Be sure that you test how the program responds to correct answers, incorrect responses, typos, and garbage. Also, experiment with the management and/or authoring system if one is contained in the program.

After these steps are completed, the evaluator is ready to complete the evaluation form that was selected by the planning committee or the individual in charge of evaluation. Most forms contain a checklist and/or a place where the evaluator may add descriptive comments. There is usually a place at the end of the evaluation process to summarize reactions to the software.

The contents of the checklist on the form and the extent of the comments required will define HOW an evaluator is expected to analyze the software. As you examine the forms in Appendix F, you will see that the form you choose will define the focus of the evaluation, your priorities, your values, and the data you collect about each program.

There are other times to evaluate software which can provide you with interesting information to supplement the conventional evaluation data. The teacher can evaluate the software after it has been used in the classroom. Another alternative is for students to complete the evaluation form after they have used the software. (A form for post-evaluations is also included in Appendix F.) Please note that the form should be modified so that it is relevant to the student and your unique classroom environment.

The ideal way to complete a teacher evaluation is in a team of two educators who have some familiarity with the subject matter being evaluated. In that configuration, individual biases are usually eliminated and evaluation becomes more than a completion of forms. It becomes a time to discuss various components of the software and their contribution to teaching and learning. Evaluation thus becoming a learning and discovery experience rather than a bureaucratic task.

Which Evaluation Form Should I Use?

There are a number of forms available which have proven to be useful evaluation tools for educators. When choosing which form to use, there are a number of issues that must first be resolved with the other members of the evaluation committee or planning team.

One, approximately how long should an evaluator spend evaluating each piece of software? The short forms are generally checklists with a space for comments at the end of each section. These forms, (such as The Software Evaluation Form and the form developed by TECC, included in Appendix F) take a relatively short time to complete. The longer forms, (such as the Courseware Evaluation Form in Appendix F) take a long time to complete and require the evaluator to spend considerable time working with the software.

The second issue which needs to be resolved is, how much information will really be useful? Does a checklist produce sufficient information or is a longer, more detailed form necessary to communicate effectively over time?

Another question which needs to be answered is, when, during the process of software acquisition, will the evaluations be completed? The forms in Appendix F include:

- forms that can be completed by teachers while they are doing a preliminary needs assessment (such as the Courseware Needs Assessment Form),
- forms which are used when the software is being evaluated by classroom teachers (such as the CAI Evaluation and MicroSIFT Courseware Description and Evaluation Forms), and
- forms which are used to evaluate the software as it is being used in the classroom (such as the Post-Evaluation Form: Is the Software Useful in Your Classroom?) These "post-evaluation" forms can be completed either by the student and/or the teacher.

Should several types of forms be completed by different people or is an evaluation by the classroom teacher sufficient? Should it be supplemented by a student evaluation?

As noted, a number of forms are included in Appendix F of this handbook. Before actually using any of these forms, you will probably need to customize the form so that it reflects your local needs and priorities. For example, most evaluation sheets do not contain questions directly related to the vocational education curriculum. Questions such as the following might need to be added to an already existing form or might form the basis for another form, Evaluation of Software for Vocational Education:

- Are all technical terms adequately explained?
- Does the program illustrate application of the subject matter to realistic job tasks?
- Does the program teach procedures which will be used in a job setting?

In summary, you probably do not need to create a form to evaluate software but what you must do, once you have defined your needs and priorities, is be sure that they are reflected in both the way you will complete the evaluation process and the forms that you adapt for your personal use.

Chapter 8

Task #6: RECOMMENDING A SOFTWARE PURCHASE

When you have completed the preliminary considerations necessary for an effective review and evaluation of software for a computer-based learning system, you will have completed the following.

1) Established guidelines and priorities which then became the underlying directives of the evaluation process
2) Identified software that runs on your machine with the available peripherals
3) Examined the existing curriculum to determine whether the software fits into the curriculum
4) Determined whether the software will meet the needs of most students or only the special needs of a subgroup
5) Obtained a copy of the software for preview
6) Selected or adapted an evaluation instrument which reflects the established guidelines and priorities
7) Software evaluations and reviews by qualified educators/students

Factors to Consider

You are now ready to decide whether or not to recommend purchase of the software. Your decision will be primarily based on the information collected with the evaluation forms but before you arrive at a conclusion, there are several factors to consider aside from the worth of the software.

1. **How many copies will you order?**

   Each institution handles orders from individual instructors in a different way. Determine what the ordering policy is and be prepared to adapt your needs to the required procedures. At one university, for example, the Learning Resource Center is the software procurement clearinghouse. When an instructor is considering purchase of software, they must first communicate with the clearinghouse who, in turn, communicates intent to the entire campus in order to assess the extent of interest in the software. If there is wide interest in the software, a reduced price structure for additional copies will frequently be applied.

2. How many copies of the software does the publisher provide with each order?

   Some publishers include a backup copy of each disk but will not allow the purchaser to make copies of the program. Other companies will offer an unlimited number of backup disks for a minimal price. If you have a laboratory with a number of computers, purchasing a program which supplies only one copy of the software creates logistical problems and unexpected costs.

3. Can you legally make copies of the program for other labs or schools in the district?

   Often a publisher will enter into a contract with a district which involves making multiple copies of the software that can only be used in the district. This type of agreement provides some flexibility for the district, and reduces costs while providing multiple sales for the publisher.

4. Can the program be used with a network, hard disk, or is it only available on a floppy disk?

   When determining compatibility with your system, be sure to check out the format of the program. Many users assume that if they have the right computer, they can use the program. This is not always the case. If you have a network, it would be worth your while to buy software that operates on the network; however, most software is not written for networks and can only be used with a traditional disk drive.

Levels of Evaluation

Once you have answered the above questions, you are ready to order the software. Evaluation, as described in this handbook, is a long and often tedious process, but it is important to remember that at this point you have only completed the first of several levels of evaluation. The levels of evaluation are as follows:

Level 1: Documentation
Level 2: Formative Evaluation (by internal review and operationalized testing)
Level 3: Assessment of Learner Effectiveness
Level 4: Impact Evaluation

Chapter 9

Task #7: ORGANIZING SOFTWARE FOR EASY ACCESS

This chapter will examine ways to organize software into a workable collection. Software collections should reside in a convenient physical location and their use should be governed by workable policies regarding circulation, shelving procedures, and methods for listing the software so that both students and teachers have access to the collections. In other words, attempts need to be made to balance both the needs of the users (students and teachers) and the need to protect the collection.

According to Lathrop and Goodson (1983), the organization of a software collection depends upon who the users are and where the collection will be located. Generally, there are three places in a vocational education institution where software can be housed. They include:

1) Classroom or Computer Lab,
2) Library or Instructional Materials Center (IMC), and
3) Professional library reserved for staff only.

Software in the Classroom or Computer Lab

Generally, software should be arranged in alphabetical order unless this traditional mode of arranging materials presents particular problems in your setting. This arrangement should be supplemented with a card index file or a updated listing of programs that provide quick and easy access to information and, at the same time, avoid frequent handling of diskettes. This indexing system also provides the opportunity to list the software by different categories:

- hardware (if there is more than one model of computer in the lab),
- subject, and
- alphabetically.

(See Figure 9.1 for a sample list of software as indexed by the Computer Lab at the University of Wisconsin School of Education.)

Courseware in the Library

Library specialists need to decide if they want to catalog the software as part of the total library collection or as a separate collection within the library. Software can be arranged either alphabetically, by Dewey Decimal number, or accession number.

There are several different computer cataloguing programs which are developed specifically for use in a school media center. They can be used to not only catalogue a collection but also to search through the collection for a listing of software by subject, grade level, microcomputer system, type of program, and/or publisher.

Courseware in the Professional Library

This type of collection contains software designed for educators. These programs can be catalogued with a methodology similar to the system

Figure 9.1

MICROCOMPUTER LAB - SOFTWARE INVENTORY

SOFTWARE LISTING

0001-0999 APPLE; 2001-2999 MECC; 3001-3999 EBE;
4001-4999 ATARI; 5001-5999 MAC; 6001-6999 IBM;

ID NO.	TITLE	COMP	PUBLR	SUBJECT	LEVEL	DESCRIP
0001	& ARRAY	A	STH	Z	HC	LIBRARY OF ARRAY-RELATED BASIC ENHANCEMENTS
0002	& CHART	A	STH	Z	HC	MACHINE LANGUAGE ROUTINES TO ADD TO APPLESOFT
0003	& SAMPLER	A	STH	Z	HC	SUBROUTINE LIBRARY DESIGNED FOR ROUTINE MACHINE
0004	& SCREEN	A	STH	Z	HC	MACHINE LANGUAGE ROUTINES
3001	ABOMINABLE SNOWMAN	A	EBE	L	EM	VOCABULARY, WORD MEANINGS & COMPREHENSION
2001	ADDITION LOGICIAN	A	MCC	M	E	WHOLE NUMBER ADDITION
0207	ADJECTIVES	A	INS	L	EM	INTRODUCTION AND REVIEW
2091	ADVANCED APPLESOFT BASIC	A	MCC	C	HC	BOOLEAN ARITHMETIC, SPECIAL CALLS, PEEKS AND POKES
0007	ADVENTURES OF LOLLIPOP DRAGON	A	SVE	MED	E	BASIC MONEY AND TIME SKILLS
2002	ADVENTURES WITH FRACTIONS	A	MCC	M	EM	COMPARING FRACTIONS - SEQUEL TO GROWGINS FRACTIONS
2003	AESTHEOMETRY	A	MCC	MA	MHC	CURVES, CONIC SECTIONS, ELLIPSES, ETC.
9006	ALGEBRA PAK	A	SEI	M	M	ALGEBRA I AND II
9005	ALGEBRA WORD PROBLEMS I	A	MWC	M	MH	MOTION
0195	ALGEBRA WORD PROBLEMS II	A	MWC	M	MH	AREA, PERIMETER AND LEVER
9002	ALGEBRA WORD PROBLEMS III	A	MWC	M	MH	MIXTURE, COIN & INVESTMENT
9079	ALICE IN WONDERLAND	A	HRM	LI	E	ADVENTURE SIMULATION WITH ALICE IN WONDERLAND
0005	ALPHA PLOT	A	BGL	A	HC	GRAPHICS PRODUCTION
0147	ALPHA PLOT	A	BGL	A	HC	GRAPHICS PRODUCTION
9075	ALPHABETS	A	HEA	L	E	LETTER, WORD RECOGNITION, SPELLING, VOCABULARY

LIST OF SUBJECT AREAS

A	art/graphics
B	business education
C	computer literacy
E	special education
F	foreign language
H	health
I	interdisciplinary
L	language arts
M	math
N	natural science
P	physical education
S	social science
T	statistics
U	music
W	word processing
Y	teacher's utilities
Z	computer programming utilities
O	other

LIST OF GRADE LEVELS

P	preschool
E	elementary
M	middle school
H	high school
C	college/adult

LIST OF COMPUTER MAKES

A	Apple
I	IBM
M	Macintosh

mentioned above but should not contain programs that are purchased for student use. Programs included in this type of library would include testing programs, authoring systems, management systems and all administrative software.

Policies and Procedures Manual

A policies and procedures manual should accompany any software collection. It should contain information regarding the cataloguing system, circulation routines, backup policies, shelving arrangements, and the manner in which the material is listed (e.g., catalogue cards, a book of courseware acquisitions, or on-line access by computer).

The person responsible for maintaining the collection is usually responsible for making final policy decisions. When policies are developed, however, they should take into consideration the opinions of potential users such as students, teachers, and administrators. Generating this cooperative spirit when a collection is initially developed usually results in respect for the guidelines which govern software use.

The policies which govern the use of the software will have a direct impact on the way in which teachers use the microcomputer. The policies communicate whether the collection is available, within reasonable guidelines, or whether use is so restrictive that the needs of the user are ignored in order to protect the software.

Following is an example of an outline from a policies and procedures manual. (Adapted from Lathrop and Goodson, 1983)

Outline for Policies and Procedures Manual

A. Policy Statement

   1. Statement of intent
   2. Personnel responsible for making policies
   3. Procedures for discouraging violations of copyright laws
   4. Means of publishing and communicating policy

B. Selection of Software

   1. Committee that will choose software is comprised of (include list)
   2. Procedures for submitting purchase orders

C. Evaluation of Software

   1. Forms to be completed
   2. Definition of who should evaluate the software
   3. The evaluation process
   4. Determination of how the evaluation will impact on the decision to purchase

D. Ordering Software

   1. List of publishers or distributors where orders can be placed
   2. Rules for submitting purchase orders
   3. Name of person to whom software should be sent when it is delivered to the school
   4. Means by which software will be inventoried, catalogued, packaged, and labeled

E. **Processing Software**

1. Place where software should be processed before use
2. Policy on backups
3. Assignment of catalogue numbers
4. Packaging and labeling of software--how and by whom
5. Updating of inventory records--how and by whom
6. Storage of software and storage of backup copies
7. Listing of newly acquired software to update faculty and staff

F. Searching the Collection

1. How users will be able to locate software
2. Manner in which directory of software will be organized

G. Accessibility

1. List of users who will have access to the materials
2. List of places where software can be used
3. Required level of competence before materials can be issued
4. Length of time software can be borrowed
5. Means for payment of damages and determining responsibility
6. System for checking out software
7. Early return policy if a particular program is in high demand
8. Establishing the balance between teachers' priorities and student use
9. Policies regarding documentation and copying of manuals
10. Means of checking over the program, when returned, to determine damage

H. Storage

1. Location of software
2. How software will be stored, e.g., in shelves, file drawers, or specially designed folders/boxes
3. System for arranging software such as coding by color, Dewey Decimal Classification, or by computer brand/model
4. Environmental requirement for software such as dust free, and protection from electrical currents, chalkboards, and other elements which will damage the materials

APPENDICES

APPENDIX A

CLEARINGHOUSES AND INFORMATION CENTERS

(List is from "Evaluation of Educational Software: A Guide to Guides," Northeast Regional Exchange, Inc. and the Southwest Educational Development Laboratory, Copyright January, 1983, pp. 83-86.)

Apple Computer Clearinghouse for the Handicapped
Prentke Romich Company
R.D. 2, P.O. Box 191
Shreve, OH 44676

A source of information about Apple software being developed for handicapped people.

Apple for the Teacher
c/o Ted Perry
5848 Riddio Street
Citrus Heights, CA 95610

Operates the National Computer-Assisted Library for the Apple, a software collection of international scope. Publishes a newsletter containing reviews.

Boston Computer Society (BCS)
Educational Resource Exchange
Three Center Plaza
Boston, MA 02108

Maintains an educational resource exchange which disseminates information on software selection.

CONDUIT
P.O. Box 388
Iowa City, IA 52244

Tests, reviews and distributes software; the focus is on software for higher education.

Computer-Using Educators (CUE)
1776 Educational Park Drive
San Jose, CA 95133

Operates a software library, a microcomputer demonstration center, and an in-service training program.

Educational Products Information Exchange Institute (EPIE)
P.O. Box 620
Stony Brook, NY 11790

An educational consumer advocacy group which, in conjunction with the Microcomputer Resource Center at Columbia University Teachers College, publishes detailed critical reviews of commercially available educational software.

Helping Schools and Community Colleges to Choose Microcomputer Courseware
c/o Dr. Vicki Blum Cohen
Microcomputer Resource Center
Box 18, Teachers College
Columbia University
New York, NY 10027

This project is producing detailed reviews of courseware in math, science, and communication skills designed for elementary through community college levels. EPIE publishes the reviews periodically.

Michigan Association for Computer Users in Learning (MACUL)
33500 Van Born Road
Wayne, MI 48184

Collects and reviews public domain educational software for the Apple. Publishes reviews of educational programming.

Micro Co-op
P.O. Box 432
West Chicago, IL 60185

A software cooperative that distributes Apple and Atari software to members at reduced rates. Its bimonthly newsletter describes and compares programs.

Microcomputer Education Applications Network (MEAN)
256 North Washington Street
Falls Church, VA 22046

Aids educators in developing and selling software. Publishes a quarterly newsletter which contains information on software services.

Microcomputer Resource Center
Teachers College, Columbia University
525 W. 121st Street
New York, NY 10027

Maintains a collection of hardware, software, journals, and books, which educators are welcome to use. Runs seminars and workshops on microcomputer applications in the schools.

Microcomputer Software and Information for Teachers (MicroSIFT)
Northwest Regional Educational Laboratory
300 SW 6th Avenue
Portland, OR 97204

Disseminates descriptive and evaluative information about educational software. Its reviews are available through state and local education agencies, various periodicals, and the RICE database of the Bibliographic Retrieval Services Computerized information system.

National Council of Teachers of Mathematics (NCTM)
1906 Association Drive
Reston, VA 20091

Publishes software reviews in its various periodicals. Developed "Guidelines for Evaluating Computerized Instructional Materials."

Technical Education Research Centers, Inc. (TERC)
8 Eliot Street
Cambridge, MA 02138

Conducts workshops and provides information services relating to educational computing. A software review service is in the planning stage.

APPENDIX B

STATE AND LOCALLY FUNDED AGENCIES

(List is from "Evaluation of Educational Software: A Guide to Guides," Northeast Regional Exchange, Inc. and the Southwest Educational Development Laboratory, Copyright January, 1983, pp. 83-86.)

California Library Media Consortium
San Mateo County Office of Education
333 Main Street
Redwood City, CA 94063

Organized in 1981 by 54 library media specialists. Publishes COURSEWARE REVIEWS. All reviews are written by educators and based on classroom use of software.

California Software Clearinghouse
Office of Staff Development
State Department of Education
721 Capitol Mall
Room 634
Sacramento, CA 95814

The Clearinghouse supports 15 Teacher Education and Computer Centers (TECC) around the state, provides staff development, print resources, a collection of software and disseminates evaluations of software.

Florida Center for Instructional Computing
College of Education
University of South Florida
Tampa, FL 33620

Funded in part through the Florida State Department of Education, the FCIC serves Florida educators by compiling software reviews and maintaining an educational software index.

Instructional Materials Division
Department of Education
State of New Mexico
Santa Fe, NM 87501-2786

The Instructional Materials Division reviews educational software and publishes a list of state adopted software.

Materials Evaluation Services
North Carolina Dept. of Public Instruction
Raleigh, NC 27611

Reviews educational software and publishes a list of highly rated pieces, "Advisory List of Instructional Media," which is sent to all 50 state departments of education in the U.S. and to schools throughout North Carolina.

SOFTSWAP
c/o Ann Lathrop
San Mateo County Office of Education
333 Main Street
Redwood City, CA 94063

Collects, evaluates, and modifies educational programs, and makes them available free of charge to educators who copy them at the center. Operates a software exchange which allows any educator who contributes a program to request one in exchange. Sells public domain software at low cost.

APPENDIX C

SOFTWARE PUBLISHERS & SUPPLIERS

Academic Hallmarks
P.O. Box 998
Durango, CO 81301
(303)247-8738

Academy Software
P.O. Box 9403
San Rafael, CA 94912
(415)499-0850

Acorn Computers Corporation
400 Unicorn Park Drive
Woburn, MA 01801
800-32/A-CORN

Addison-Wesley Computing
Finchampstead Road
Workingham, Berkshire RG11 292

Aeronca Inc.
Microcomputer Software Division
P.O. Box 909
Pineville, NC 28134

Agri-Comp Systems
338 South Eighth Avenue
West Bend, WI 53095

Agricultural Computer Services
21004 S. Molalla Avenue
P.O. Box 5034
Oregon City, OR 97045
(503)657-8088

Agricultural Computer Software
P.O. Box 706
Muscatine, IA 52761
(319)264-3267

Agricultural Software Consult
1706 Sante Fe
Kingsville, TX 78363
(512)595-1937

Allison Associates
Box 313
Troy, MI 48099
(313)689-2990

Alkazan Associates
2638 S. Lynn Street
Arlington, VA 22202

American Micro Media
P.O. Box 306
Red Hook, NY 12571
(914)758-5567

American Peripherals
122 Bangor Street
Lindenhurst, NY 11757

Andent
1000 North Avenue
Waukegan, IL 60085

Apple Computer, Inc.
20525 Mariani Ave.
Cupertino, CA 95014
800-538-9696

Appleware, Inc.
6400 Hayes Street
Hollywood, FL 33024
(305)987-6889

Aquarius People Materials, Inc.
P.O. Box 128
Indian Rocks Beach, FL 33535
(813)595-7890

Arrays Inc./Continental Software
11223 S. Hindry Ave.
Los Angeles, CA 90045
(213)410-3977

ARTSCI, Inc.
5547 Satsuma Ave.
North Hollywood, CA 91601
(213)985-5763

Artworx Software Company, Inc.
150 North Main Street
Fairport, NY 14450

Arunco Corporation
P.O. Box 189
Sharpsburg, MD 21782

Ashton-Tate
10150 W. Jefferson Blvd.
Culver City, CA 90230
(213)204-5570

ATA Enterprises, Inc.
P.O. Box 5498
Springfield, VA 22150-5498
(703)455-0288

Atari, Corporation
Contact local retailer.

Atari, Inc.
Computer Division
P.O. Box 16525
Denver, CO 80216
(408)745-4569

Autodesk Inc.
2658 Bridgeway
Sausalito, CA 94965

Avant-Garde
1907 Garden Avenue
Eugene, OR 97403
(503)345-3043

Barron Enterprises
714 Willow Glen Road
Santa Barbara, CA 93105
(805)687-5873

Barron's Educational Series
113 Crossways Park Drive
Woodbury, NY 11797
(516)921-8750

Basics & Beyond
Pinesbridge Road Box 10
Amawalk, NY 10501
(914)962-2355

Baxter Technologies Corp.
69 Montcalm Avenue
Toronto, Ontario Canada M6E 4N9
(416)787-2494

Beaman Proter, Inc.
Pleasant Ridge Road
Harrison, NY 10528
(914)967-3504

B.E.A.R., Inc.
479 Fulton Avenue
Hempstead, NY 11550
(515)489-0223

BEDE Software Systems
743 Alexander Road
Princeton, NJ 08540
(609)452-1128

Behavioral Engineering
230 Mount Hermon Road
Scotts Valley, CA 95066
(408)438-5649

Bell & Howell/Micro Photo Div.
Old Mansfield Road
Wooster, OH 44691
800-321-9881

Bergwall Electronic Publishing
106 Charles Lindbergh Blvd.
Uniondale, NY 11553
(516)222-1111; 800-645-3565

Bertamax, Inc.
3647 Stone Way North
Seattle, WA 98103
(206)547-4056

Biosource Software
2105 S. Franklin, Suite B
Kirksville, MO 63501
(816)665-3678

Bluebird's Computer Software
P.O. Box 339
Wyandotte, MI 48192

Blue Chip Software
19824 Ventura Blvd., Suite 125
Woodland Hills, CA 91364
(213)346-0730

Blythe Valley Software
P.O. Box 353
Oakhurst, CA 93664
(209)683-4735

Bob Baker Software
3688 Halter Ct.
Sacramento, CA 95821
(916)972-1931

Borg-Warner Educational Systems
600 West University Drive
Arlington Heights, IL 60004-1889

BPC
P.O. Box 74157
Los Angeles, CA 90004
(503)657-8088

BPI Systems, Inc.
3423 Guadalupe
Austin, TX 78705
(512)454-7191; (512)454-4677

BrainBank, Inc.
220 Fifth Avenue
New York, NY 10001
(212)686-6565

Brodhead-Garrett Co.
4560 East 71st Street
Cleveland, OH 44105
800-321-6730

Broderbund Software
17 Paul Drive
San Rafael, CA 94903
(415)479-1170

The Cactusplot Company
1442 N. McAllister
Tempe, AZ 85281
(602)945-1667

California Micro Computer
17791 Jamestown Lane
Huntington Beach, CA 92647

Cambridge Development Lab
36 Pleasant Street
Watertown, MA 02172
(617)890-8076

Career Aids, Inc.
20417 Nordhoff St., Dept. Q8
Chatsworth, CA 91311
(818)341-8200

Career Research Corporation
65 West Gordon Avenue
Salt Lake City, UT 84107
(801)266-1441

Carousel Software, Inc.
877 Beacon St.
Baston, MA 02215
(617)437-9419

CBS College Publishing
383 Madison Avenue
New York, NY 10017
(212)872-2000

CBS Software
One Fawcett Place
Greenwich, CT 06836
(203)622-2673

CDEX Corporation
5050 El Camino Real, Suite 200
Lox Altos, CA 94022

CEC Computer Systems
2140 Winston Ave., S.W.
Roanoke, VA 24014
(703)981-0326

Center for Educ. Exper/Dev/Eval
218 Linquist Center
University of Iowa
Iowa City, IA 52242

Chessell-Robocom Corp.
111 Pheasant Run
Newton, PA 18940
(215)968-4422

Chronicle Guidance Pub. Inc.
Aurora St.
Moravia, NY 13118
(315)497-0330

Classic Software Productions
7566 John Avenue
St. Louis, MO 63129
(314)846-8675

Classroom Consortia Media
28 Bay Street
Staten Island, NY 10301
800-237-1113

The College Board
888 Seventh Avenue
New York, NY 10106
(717)348-9288

Color Software Services
P.O. Box 1708
Greenville, TX 75401
(214)454-3674

Commodore Computer Systems
1200 Wilson Drive
West Chester, PA 19380
(215)431-9100

Comprehensive Software
2810 Artesia Blvd.
Redondo Beach, CA 90278
(213)214-1461

COMPress
P.O. Box 102
Wentworth, NH 03282
(603)764-5831

Compulex, Inc.
256 Market Street
Lowell, MA 01852

Compumax
P.O. Box 7239
Menlo Park, CA 94025
(415)854-6700

Compu-Tations, Inc.
P.O. Box 502
Troy, MI 48099
(313)689-5059

Computer Age Education, Inc.
5225 Wisconsin Ave., N.W. Ste601
Washington, D.C. 20015
(202)966-3686

Computer Applications Tomorrow
24151 Telegraph Road
Southfield, MI 48034
(313)356-1850

Computer Creations
6861 Convoy Court
San Diego, CA 92111
(619)277-8822

Compuware
15 Center Road
Randolph, NJ 07869
(201)366-8540

CONDUIT
University of Iowa
Oakdale Campus
Iowa City, IA 52242
(319)353-5789

The Conover Company
P.O. Box 155
Omro, WI 54963
(414)685-5707

Consulting Psychologists Press, Inc.
577 College Ave.
P.O. Box 11636
Palo Alto, CA 94306
(415)326-4448

The Continental Press, Inc.
520 East Bainbridge Street
Elizabethtown, PA 17022
800-233-0759

Control Data Publishing Co.
P.O. Box 261127
San Diego, CA 92126
800-233-3784

Coronado Publishing, Inc.
1250 6th Avenue
San Diego, CA 92101
(619)231-9466

Cortland Data System
P.O. Box 14414
Chicago, IL 60614
(312)549-2029

Cove View Press
Box 810
Arcata, CA 95521
(707)822-7079

Creative Computing Software
39 E. Hanover Ave.
Morris Plains, NJ 07950

Cross Educational Software
1802 North Trenton Street
P.O. Box 1536
Ruston, LA 71270
(318)255-8921

CSG Corporation
277 S. Washington, Suite 209
Alexandria, VA 22314
(703)684-5101

CUIS Distribution Center
230 Schilling Circle
Hunt Valley, MD 21031
(301)628-6063

Curriculum Publications Clrghse.
Western Illinois University
46 Horrabin Hall
Macomb, IL 61455

Cust'msoft
485 Broadway St., Suite E
El Centro, CA 92243
(619)352-1400

CVIS Consortium
230 Schilling Circle
Hunt Valley, MD 21031
(301)628-6063

Data Consulting Group
12 Skylark #8
Larkspar, CA 94939
(415)927-0990

Datatech Software Systems
19312 East Eldorado Drive
Aurora, CO 80013

Data Transforms
616 Washington, Suite 106
Denver, CO 80203
(303)832-1501

DCH Software - D.C. Heath & Co.
125 Spring Street
Lexington, MA 02173
800-428-8071

DEC Computing
5307 Lynwood Drive
West Lafayette, IN 47906

Decision Support Software Inc.
1300 Vincent Place
McLean, VA 22101
(703)442-7900

Digipac Computer Consultants
907 River Street East
Prince Albert, SASk. S6V0B3
(306)764-1707

Digital Marketing Corporation
2363 Boulevard Circle
Walnut Creek, CA 94595

Digital Research, Inc.
60 Garden Court, Box DRI
Monterey, CA 93942
(408)649-3896

The Dine System
724 Robin Road
West Amherst, NY 14228
(716)688-2492; (716)831-2484

District One Technical Institute
Attn: Dale Diedrich
620 West Clairemont Ave.
Eau Claire, WI 54701
(715)836-3920

Diversified Educ. Enterprises
725 Main Street
Lafayette, IN 47901

Dorsett Educational Systems, Inc.
P.O. Box 1226
Norman, OK 73070
800-345-8500

Dow Jones News/Retrieval
P.O. Box 300
Princeton, NJ 08540
800-345-8500

Dusoft Corp.
1803 Woodfield Dr.
Savoy, IL 61874
(217)356-2818

Dynacomp, Inc.
1427 Monroe Avenue
Rochester, NY 14618
(716)442-8960

Eastern House
3239 Linda Drive
Winston-Salem, NC 27106
(919)748-8446

Educational Activities, Inc.
P.O. Box 392
Freeport, NY 11520
800-645-3739; (516)223-4666

Educational Audio Visual
19 Marble Avenue
Pleasantville, NY 10570
800-431-2196

Educational Images Ltd.
P.O. Box 3457
West Side Station
Elmira, NY 14905
(607)732-1090

Educ. Materials & Equipment Co.
P.O. Box 17
Pelham, NY 10803

Educational Media Corp.
P.O. Box 21311
Minneapolis, MN 55421
(612)636-5098

Educ. Software & Marketing Co.
1035 Outer Park Drive
Suite 309
Springfield, IL 62704

Educational Software, Inc.
1974 Buck
Eugene, OR 97405
(503)344-2767

Educational Technology Center
University of California
Irvine, CA 92717

Educational Testing Service
SIGI Office, Rosedale Road
Princeton, NJ 08541
(609)734-5165

Education Associates, Inc.
33 Fountain Place; P.O. Box Y
Frankfort, KY 40602
800-626-2950; (502)227-4783

Edu-Soft
P.O. Box 2560
Berkeley, CA 94702
800-227-2778; (415)548-2304

EduTech, Inc.
634 Commonwealth Ave.
Newton Centre, MA 02159
(617)965-4813

Elliott & Fitzpatrick, Inc.
P.O. Box 1945
Athens, GA 30603
(404)548-8161

Elwyn Institutes
Material Development Center
111 Elwyn Road
Elwyn, PA 19063
(215)358-6653

EMC Publishing
300 York Avenue
St. Paul, MN 55101
800-328-1452

Encyclopedia Brittanica Educ.
425 N. Michigan Avenue
Chicago, Il 60611
800-554-9862

ENSIGN SOFTWARE
7337 Northview
Boise, ID 83704
(208)378-8086

Epilepsy Foundation of America
4351 Garden City Drive
Landover, MD 20785
(301)459-3700

Eureka
5625 Sutter Avenue
Richmond, CA 94804
(414)524-4976

Farm Info. Services Inc.
P.O. Box 336
Waterproof, LA 71375
(318)749-5535

Feedback Inc.
620 Springfield Ave.
Berkeley Heights, NJ 07922
(201)464-5181

Ferox Microsystems Inc.
1701 N. Fort Myer Dr. #611
Arlington, VA 22209
(703)841-0800

Focus Media, Inc.
839 Stewart Avenue, P.O. Box 865
Garden City, NY 11530
800-645-8989; (516)794-8900

Follett Library Book Company
4506 N.W. Highway
Crystal Lake, IL 60014
800-435-6170; (815) 455-1100

Friendly Soft, Inc.
3638 W. Pioneer Parkway
Arlington, TX 76013
(817)277-9378

M.D. Fullmer Associates
1132 Via Jose
San Jose, CA 95120
(408)997-1154

Funk Vocab-Ware
4825 Province Line Road
Princeton, NJ 08540
(609)924-1769

Gregg, McGraw-Hill
1221 Ave. of Americas
New York, NY 10020
800-223-4180

Harbor Software
33 East Carver Street
Huntington, NY 11743
(516)351-3662

Harcourt Brace Jovanovich
120 Sixth Avenue
San Diego, CA 92101
(616)699-6736

Harvard Associates, Inc.
260 Beacon Street
Somerville, MA 02143

Hayden Book Company
10 Mulholland Drive
Hasbrouck Heights, NJ 07604
(201)393-6306

Hayden Software Company
600 Suffolk Street
Lowell, MA 01853
800-343-1218

Heathkit Education Systems
Heath Company
Benton Harbor, MI 49022
800-253-7057

HesWare- Human Engineered Sfwr.
150 North Hill
Brisbane, CA 94005
800-227-6703; 800-632-7979

High Technology Software Prod.
1611 N.W. 23rd, P.O. Box 60406
Oklahoma City, OK 73146
(405)524-4359

Hoffman Educational Systems
1720 Flower Avenue
Duarte, CA 91010
(213)303-1571

Holm-Dietz Computer Systems Inc.
555 W. Shaw #C-14
Fresno, CA 93704
(209)226-7506

Holt, Rinehart and Winston
383 Madison Avenue
New York, NY 10017
(212)872-2000

Home Computer Software
1035 Saratoga-Sunnyvale Road
San Jose, CA 95129
(408)255-9544

Homeware
P.O. Box 3062 T.S.
Ruston, LA 71272

Houghton Mifflin Company
One Beacon Street
Boston, MA 02107
(617)725-5000

HowardSoft
8008 Girard Ave. #310
LaJolla, CA 92037
(619)454-0121

HRM Software
175 Tompkins Avenue
Pleasantville, NY 01570
(914)769-6900

IBM
P.O. Box 1329
Boca Raton, FL 33432
800-IBM-2468; 800-447-4700

Idaho Software Producers
1863 Bitteroot Drive
Twin Falls, ID 83301
(208)734-0746

Indigo Creek Software
3343 County Rd. 15
Marengo, OH 43334
(614)747-2476

Individual Software Inc.
1163-1 Chess Drive
Foster City, CA 94404
(415)341-6116

Information Unlimited Sftw. Inc.
2401 Marin Shin Way
Sausalito, CA 94656
(415)331-6700

Innovative Programming Assoc, Inc.
1 Airport Place
Princeton, NJ 08540
(609)924-7272

Insoft, Inc.
P.O. Box 608
Beaverton, OR 97075
(503)641-5223

Intellectual Software
798 North Ave.
Bridgeport, CT 06606
800-232-2224

InterLearn, Inc.
P.O. Box 342
Cardiff By The Sea, CA 92007

J & S Software
140 Reid Ave.
Port Washington, NY 11050

Jefferson Software
723 Kanawha Blvd., East
Suite 400
Charleston, WV 25301
(304)344-8550

K-12 MicroMedia Inc.
172 Broadway
Woodcliff Lake, NJ 07675
(800)922-0401

Keyboard Productivity, Inc.
4676 Admiralty Way, Suite 419
Marina Del Rey, CA 90292
(213)827-7616

Koala Technologies Corporation
3120 Patrick Henry Dr.
Santa Clara, CA 95050

Krell Software Corporation
1320 Stony Brook Rd.
Stony Brook, NY 22790
(516)751-5639

Lawrence Hall of Science
Math and Computer Ed. Project
University of California
Berkeley, CA 94720
(415)642-3167

The Learning Seed Company
21250 No. Andover Road
Kildeer, IL 60047
(312)397-4470

David Lemire Enterprises
Box 2326
Evanston, WY 82930
(309)789-0828

Lennox Education Products
315 Murfreesboro Street
Murfreesboro, TN 37130
(615)896-5410

Life Science Associates
1 Fennimore Rd.
Bayport, NY 11705
(516)472-2111

Lifetree Software Inc.
411 Pacific St. #315
Monterey, CA 93940
(408)373-4718

Living Videotext Inc.
2432 Charleston Road
Mt. View, CA 94043
(415)964-6300

Macmillian Publishing Co. Inc.
College Division
866 Third Ave.
New York, NY 10022
800-223-3215

Marshware
P.O. Box 8082
Shawnee Mission, KS 66208
(816)523-1059

MASBO
99 School Street
Weston, MA 02193
(617)647-5500

MCE Inc.
157 South Kalamazoo Mall
Suite 250
Kalamazoo, MI 49007
800-421-4157

McKilligan Supply Corp.
435 Main Street
Johnson City, NY 13790
(607)729-6511

MECC-Minn Educ. Computing Corp.
3490 Lexington Avenue North
St. Paul, MN 55112-8097
(612)481-3500

Media Materials, Inc.
2936 Remington Avenue
Baltimore, MD 21211
800-638-1010

Media-Sim, Inc.
30 W. Pershing Rd, 350 Un. Sta.
Kansas City, MO 64108
(816)474-4771

MEDMICRO
P.O. Box 9615
Madison, WI 53715
(301)236-0397

Meridian Ltd.
432 Walnut Street, Suite 510
Cincinnati, OH 45202

Merit Audio Visual
P.O. Box 392
New York, NY 10024
(212)787-4766

Merlan Scientific, Ltd.
247 Armstrong Avenue
Georgetown, Ontario L7G 46
(416-877-0171

Micro Art Programmers
173 Birch Ave.
Cayucos, CA 93430
(805)995-2329

Microcomputer Games, Inc.
4517 Hartford Road
Baltimore, MD 21214
800-638-9292

Microcomputer Management
P.O. Box 1794
Fort Collins, CO 80522
(303)493-5700

Microcomputer Workshops Corp.
225 Westchester Ave.
Port Chester, NY 10573
(914)937-5440

Micro Control Systems, Inc.
27 Hartford Tpk.
Vernon, CT 06066
(203)647-0220

MICRO-ED, Inc.
8108 Eden Rd. South
P.O. Box 444005
Eden Prairie, MN 55344
(800)642-7633

Micrograms Inc.
P.O. Box 2146
Loves Park, IL 61130
(815)965-2464

Micro Lab
2699 Skokie Valley Rd.
Highland Park, IL 60035
(312)433-7550

Micro Learningware
P.O. Box 307
Mankato, MN 56002
(507)625-2205

Microphys Programs Inc.
1737 West Second St.
Brooklyn, NY 11223
(212)375-5151

Micro Power & Light Company
12820 Hillcrest Rd.
Suite 219
Dallas, TX 75230
(214)239-6620

MicroPro Int. Corp.
33 San Pablo Ave.
San Rafael, CA 94903
(415)499-1200

Microsoft Corporation
10700 Northup Way
Bellevue, WA 98004
(206)828-8088

Milliken Publishing Co.
Company Products Division
1100 Research Blvd.
P.O. Box 21579
St. Louis, MO 63132
(314)991-4220

Milwaukee Area Tech. College
1015 North Sixth Street
Milwaukee, WI 53203
(414)278-6743

Mindscape, Inc.
3444 Dundee Rd.
Northbrook, IL 60062
(312)480-7667

Minnesota Curriculum Serv. Center
3554 White Bear Ave.
White Bear Lake, MN 55110
(612)770-3943

Miracle Computing
313 Clayton Court
Lawrence, KS 66044
(913)843-5863

Modtec
45 Williamsburg Drive
Fairport, NY 14450-9112
(716)425-1651

MUSE Software
347 North Charles St.
Baltimore, MD 21201
(301)659-7212

NASSP
1904 Association Drive
Reston, VA 22091
(703)860-0200

Natl Educ. Software Services
1879 Locust Drive
Verona, WI 53593
(608)845-8410

Newline Software
P.O. Box 289
Tiverton, RI 02878
(401)624-3322

Occupational Awareness
P.O. Box 948
Los Alamitos, CA 90720-0948
(503)325-2041

Office Solutions Inc.
P.O. Box 5146
Madison, WI 53705
(608)274-5047

Opportunities for Learning
20417 Nordhoff St.
Chatsworth, CA 91311
(818)341-2545

Orange Juice Software Systems
222 South Washington Ave.
New Richmond, WI 54017
(715)246-3588

Paradign Consultants
2400 Hopkins Ave.
Redwood City, CA 94062
(415)369-7803

Peachtree Software Inc.
3445 Peachtree Rd., N.E.
Atlanta, GA 30326
(404)239-3000

PCD Systems, Inc.
163 Main Street, P.O. Box 143
Penn Yan, NY 14527
(315)7428

Penguin Software
830 4th Ave.
Geneva, IL 60134
(312)232-1984

Personal CAD Systems
981 University Ave.
Los Gatos, CA 95030
(408)354-7193

Personal Software Co.
P.O. Box 776
Salt Lake, UT 84110
(801)943-6908

Peterson's Guides - Dept. 4102
166 Bunn Drive, P.O. Box 2123
Princeton, NY 08540
800-225-0261

The Pillsbury Company
M/S 3286, Pillsbury Center
Minneapolis, MN 55402
(612)330-8732

The Porter Company
P.O. Box 415
Pittsford, NY 14534
(716)385-1438

Powersoft, Inc.
P.O. Box 157
Pitman, NJ 0807(609)589-5500

Professional Computerware
P.O. Box 409
Morganton, GA 30560
(404)374-6045

The Professor Corporation
959 Northwest 53rd St.
Ft. Lauderdale, FL 33309
800-222-1399

Program Design, Inc.
95 East Putnam Ave.
Greenwich, CT 06830
(203)661-8799

Programs for Learning, Inc.
P.O. Box 1199
30 Elm St.
New Milford, CT 06776
(203)355-3452

Public Interest Software
1501 16th Street, N.W.
Washington, D.C. 20036
(202)332-9110

Queue, Inc.
5 Chapel Hill Dr.
Fairfield, CT 06432
800-232-2224

Radio Shack
Tandy Corporation
1400 One Tandy Center
Fort Woth, TX 76102

Rainbow Computing
9719 Reseda Boulevard
Northridge, CA 91324
(800)423-5441

Raised Dot Computing
310 S. 7th Street
Lewisburg, PA 17837
(717)523-6739

Rand McNally & Company
8255 North Central Park Ave.
P.O. Box 7600
Chicago, IL 60680
(312)673-9100

RB Robot Corporation
18301 West 10th Ave., Suite 310
Golden, CO 80401
(303)279-5525

Red Wing Business Systems
P.O. Box 19
610 Main St.
Red Wing, MN 55066
(612)388-1106

Resource Software Int'l., Inc.
330 New Brunswick Ave.
Fords, NJ 08863
(201)738-8500

Responsive Logic
156 Donald Street
Oregon City, OR 97045
(503)655-4980

Right on Programs
Division of Computeam, Inc.
140 East Main St.
Huntington, NY 11743
(516)271-3177

Rockroy Inc.
7721 E. Gray Rd.
Scottsdale, AZ 85260
(800)528-2361

Satellite Software Int.
288 W. Center St.
Orem, UT 84057
(801)224-8554

Sat Trak International
4543 Templeton Gap Road
Colorado Springs, CO 80918
(303)488-3272

Scarborough Systems, Inc.
25 North Broadway
Tarrytown, NY 10591
(914)332-4545

Steve Schaefer
24 Ashford
Jackson, NJ 08527

Scholastic, Inc.
730 Broadway
New York, NY 10003
800-325-6149

School & Home Courseware, Inc.
1341 Bulldog Lane
Suite C
Fresno, CA 93710
(209)431-8300

Scott, Foresman and Company
1900 East Lake Ave.
Glenview, IL 60025
(312)729-3000

Sensible Software
24011 Seneca
Oak Park, MI 48237
(313)977-3869

SET Industries
Box 122
Lundonville, VT 05851
(802)626-9351

Setzer Educational Services
45-27 156th Street
Flushing, NY 11355
(212)539-3646

Sheridan College
1430 Trafalgar Road
Oakville, Ontario L6H 2L1
(416)845-9430

SHOPWARE Educational Systems
Rt. 1, Box 330-E, Dept. D
Aberdeen, WA 98520
Phone (206)532-3392

Sierra On-Line Inc.
Sierra On-Line Bldg.
Coarsegoid, CA 93614
(209)683-6858

Simsoft, Inc.
P.O. Box 7095
Port Huron, MI 48060
(313)984-1570

Sirius Software, Inc.
10364 Rockingham Dr.
Sacramento, CA 95827
(916)366-1195

The 6502 Program Exchange
2920 West Moana Lane
Reno, NV 89509
(702)825-8413

Software Publishing Corp.
1901 Landings Dr.
Mountain View, CA 94043
(415)962-8910

Software Research Corporation
3939 Quadra St.
Victoria, B.C.
Canada V8X 1J5

Software Strategies Inc.
7412 Washington Ave. S.
Eden Prairie, MN 55344
(612)941-4044

Solartek
RD #1, Box 255A
West Hurley, NY 12491
(914)679-5366

Southeastern Educational Software
P.O. Box 48347
Atlanta, GA 30362
(404)457-8336

SouthWest Ed Psych Services Inc.
P.O. Box 1870
Phoenix, AZ 85001
(602)253-6528

South-Western Publishing Company
5101 Madison Rd.
Cincinnati, OH 45227
(513)271-8811

Specialized Data Systems, Inc.
P.O. Box 8278
Madison, WI 53708
(608)241-5050

Spectrum Software
75-1 Todd Pond Rd.
Lincoln, MA 01773
(617)893-9130

Spinnaker Software Corp.
One Kendall Sq.
Cambridge, MA 02139
(617)494-1200

SRA
Science Research Assoc., Inc.
155 North Wacker Dr.
Chicago, IL 60606
(312)984-7000

Sterling Swift Publishing Co.
883 Stierlin Rd., A-200
Mountain View, CA 94043
(415)964-1353

Stockard Microcomputer SW
1744 Williow Point Drive
Shreveport, LA 71119
(318)636-6657

Stoneware Inc.
50 Belevedere St.
San Rafael, CA 94901
(415)454-6500

Strictly Software
P.O. Box 338
Granville, OH 43023
(614)587-2938

Sunburst Communications, Inc.
39 Washington Ave.
Pleasantville, NY 10570
800-431-1934

Synergistic Software
830 N. Riverside Dr.
Renton, WA 98055
(206)226-3216

Systems Plus Inc.
1120 San Antonio Rd.
Palo Alto, CA 94303
(415)969-7047

T & W Systems
7372 Prince Dr. #106
Huntington Beach, CA 92647
(714)847-9960

Taylormade Software
P.O. Box 5574
Lincoln, NY 68505
(402)488-0196

Teaching Aids, Inc.
P.O. Box 1798
Costa Mesa, CA 92628-0798
(714)548-9321

Technical Data Corp.
45 Milk St.
Boston, MA 02109
(617)482-3341

Teck Associates
P.O. Box 8732
White Bear Lake, MN 55110
(612)429-5570

Telas Software Products
3420 Ocean Park Blvd.
Santa Monica, CA 90405
(800)423-6322

Telephone Sftw. Connection, Inc.
P.O. Box 6548
Torrance, cA 90504

Theobyte
8163 Fayette
Kansas City, KS 66109
(913)287-3663

Thorobred Software, Inc.
10 Olympic Plaza
Murray, KY 42071
(502)753-7733

Triton Products Company
P.O. Box 8123
San Francisco, CA 94128
(415)574-2858; 800-227-6900

Unidata, Inc.
3025 Hilltop
Ann Arbor, MI   48103
(313)769-2582

Vernier Software
2920 Southwest 89th St.
Portland, OR   97225
(503)297-5317

Versa Computing, Inc.
3541 Old Conejo Rd. #104
Newbury Park, CA   91320
(805)498-1956

Walt Disney Telecommunications
500 South Buena Vista
Burbank, CA   91521
(800)423-2555

John Wiley & Sons
605 Third Ave.
New York, NY   10158
(212)850-6164

Wims Computer Consulting
6723 East 66th Place
Tulsa, OK   74133
(918)492-9036

Wisconsin Microware, Inc.
5201 Old Middleton Rd.
Madison, WI   53705
(608)233-4459

The Wizard
18584 Carlwyn Drive
Castro Valley, CA   94546
(415)582-8252

Zypcom
P.O. Box 3421
Boise, ID   83703
(208)345-2387

APPENDIX D

PUBLICATIONS ON MICROCOMPUTERS & HIGH TECHNOLOGY DEVELOPED BY THE VOCATIONAL STUDIES CENTER

For more information on the following publications, contact the Vocational Studies Center, 964 Educational Sciences Building, 1025 W. Johnson Street, Madison, WI 53706 608/263-4357.

1. HIGH TECHNOLOGY IN VOCATIONAL EDUCATION: TRAINING PROGRAMS FOR EMERGING OCCUPATIONS

This new manual highlights training programs designed to either train workers for new occupations or upgrade workers who need to perform different tasks as a result of high technology applications. Presented in case study format, programs are highlighted that have been successful in training or retraining workers. Among curriculum areas included are: telecommunications, lasers, manufacturing and service technologies, information processing, CAD/CAM, numerical control, robotics, biomedical, and others

VCVE104 .... $36.00

2. INSTRUCTIONAL STRATEGIES FOR USING MICROCOMPUTERS IN VOCATIONAL EDUCATION

Incorporating the microcomputer into instructional practices is a difficult and often frustrating experience. This handbook will contain case studies of many vocational educators who have successfully used the microcomputer in voc ed programs. Areas covered include: agriculture, business education, home economics, industrial education, distributive education & marketing, health education, and more

VCVE105 .... $30.00

3. EFFECTIVE MICROCOMPUTER ASSISTED INSTRUCTION FOR THE VOCATIONAL EDUCATION OF SPECIAL NEEDS STUDENTS

This manual provides assistance to persons concerned with the vocational and career education of handicapped and disadvantaged youth. The handbook contains the following information: a) microcomputer assisted instructional programs developed and/or used by practitioners in vocational classes, resource rooms, and prevocational settings, b) program name, developer, contact person, vocational area, type of student for which it was found effective, program format and description, and modifications for special populations, and c) articles on microcomputer assisted instruction

SNE306 .... $25.00

4. MICROCOMPUTERS: APPLICATIONS IN VOCATIONAL EDUCATION

This new handbook contains up-to-date information on microcomputer applications in vocational education. Contributors include experts and educators in the following areas of microcomputer usage: literacy, buying hardware, evaluating software, authoring systems, beginning programming, using the microcomputer with special needs students, office of the future, agriculture, business education, home economics, industrial education, distributive education & marketing, health education, and basic skills & adult education

MCVE102 .... $30.00

5. MICROCOMPUTER SOFTWARE PROGRAMS FOR VOCATIONAL EDUCATION

A comprehensive listing of over 1,000 vocational education related software programs available in the following curricular areas: business education, literacy, graphics, marketing & distributive education, health, home economics, science, career education & student services, trade and industrial education, and agriculture. Program descriptions are included along with hardware requirements. The two appendixes contain address listings and alphabetical software listings. This publication is an extremely helpful guide for vocational educators interested in microcomputer software.

MCVE101 .... $15.00

6. BASIC SKILLS IMPROVEMENT--A HANDBOOK FOR READING, MATH, WRITING AND ORAL COMMUNICATION

400 pages of program information and planning ideas. The handbook provides educators, program planners, schools, and community agencies with ideas, guidelines, and resources for planning basic skills improvement programs. Content focuses on issues, concerns, and questions raised by administrators, program planners, and educators. It is designed for use by those with or without expertise. A collection of information and resources from across the nation, the handbook can help you: plan programs for children, youth, and adults; define basic skills and standards; plan local programs; evaluate programs; coordinate efforts; include basic skills in the regular classroom; and use microcomputers

BSI104 .... $27.00

APPENDIX E

MAGAZINES, JOURNALS AND PERIODICALS WHICH CONTAIN GENERAL INFORMATION ABOUT MICROCOMPUTERS AND SOFTWARE REVIEWS

AEDS Monitor
1201 16th Street, N.W.
Washington, D.C. 20036
(202)822-7845

$15 for 4 issues/year. Average no. reviews per issue: 2

The Apple Journal of Courseware Review
Apple Educational Foundation
20525 Mariani Avenue
Cupertino, CA 95014

$5.95 per issue; biannually. Average no. reviews per issue: 20. In-depth critical evaluations with complete descriptions of each program and its potential for effective classroom use. Apple software only. Photographs of actual screens from each program. Available from microcomputer dealers.

Applesauce
P.O. Box 598
Venice, CA 90291

Six issues per year. Contains reviews of Apple software.

Arithmetic Teacher
National Council of Teachers of Mathematics
1906 Association Drive
Reston, VA 22901
(703)620-9840

$36 for 9 issues/year; $30 membership dues include magazine subscription. Average reviews per issue: 5. Math programs only.

BYTE
70 Main Street
Peterborough, NJ 03458

Monthly. Includes detailed discussions of new software.

Call--A.P.P.L.E.
Apple Puget Sound Program
Library Exchange
304 Main Avenue S., Suite 300
Renton, WA 98055

Monthly. Contains Apple software reviews.

Classroom Computer News
Box 266
Cambridge, MA 02138
(617)923-8595

$16 for 6 issues/year. 4-5 fairly extensive reviews per issue. Currently expanding review coverage.

Compute!
515 Abbott Drive
Broomall, PA 19008

Monthly. Frequently features educational programs.

Computer Software: A Manual for Teachers
Teacher Center for Montana
215 S. 6th Street West
Missoula, MT 59801

A collection of reviews of software in language arts, science, social studies, etc.

The Computing Teacher
Dept. of Computer & Information Science
University of Oregon
Eugene, OR 97403

$14.50 for 9 issues/year. Average no. reviews per issue: 8. Often includes reviews produced by MicroSIFT.

Courseware Report Card
150 West Carob Street
Compton, CA 90220
(213)979-1955; (213)637-2131

(two editions: K-6 and 7-12) $49.50 for 5 issues/year. Average number of reviews per issue: 20-25. In-depth description and evaluation, including capsule summary rating various aspects of the program from "A" to "F."

Creative Computing
Box 789-M
Morristown, NJ 07690

$24.97 for 12 issues/year. Average no. instructional software reviews per issue: 20. Short descriptions with some critical evaluation.

CUE Newsletter
c/o Don McKell
Computer-Using Educators
P.O. Box 18547
San Jose, CA 95158

$6 membership dues include 6 issues/year. Average no. reviews per issue: 2-6.

Digest of Software Reviews: Education
1341 Bulldog Lane, Suite C
Fresno, CA 93710

Four issues per year; describes 50 programs per issue.

Dvorak's Software Review
704 Solano Avenue
Albany, CA 94706

$5 for 8 issues/year. Average no. reviews per issue: 2-5. North Star software only.

Educational Computer
Box 535
Cupertino, CA 95015

$15 for 6 issues/year. Average no. reviews per issue: 1. A thorough, critical evaluation.

Educational Technology
140 Sylvan Avenue
Englewood Cliffs, NJ 07632

$49 for 12 issues/year. Average no. reviews per issue: 6. In-depth evaluations, with detailed information on field-testing.

80-Microcomputing
P.O. Box 981
Farmingdale, NY 11737

$18 for 12 issues/year. Average no. instructional software reviews per issue: 5. TRS-80 software only.

80-Microcomputing
80 Pine Street
Peterborough, NH 03458

Monthly. Concerned with TRS-80 information only.

80 Software Critique
P.O. Box 134
Waukegan, IL 60085

$24 for 4 issues/year. Offers rating scale 1-100.

The Electronic Classroom
150 West Carob Street
Compton, CA 90220

Monthly. Contains detailed evaluations of software designed for classroom use.

Electronic Education
Electronic Communications, Inc.
Suite 220
1311 Executive Center Drive
Tallahassee, FL 32301

Ten issues yearly. Each issue contains a detailed review of a computer system or instructional package.

Electronic Learning
902 Sylvan Avenue
Englewood Cliffs, NJ 07632

$19 for 8 issues/year. Average reviews per issue: 406. Each one prepared by teams of curriculum specialists, teachers, administrators, and (where appropriate) students.

EPIE Report
EPIE Institute
Box 620
Stony Brook, NY 11790

$25 for 18 issues/year; $5 for associate subscriptions, reviews per issue: 506. Mostly math in first issue.

Hardcore Computing
14404 East D Street
Tacoma, WA 98445

Quarterly. Contains program listings, reviews and discussions of issues relating to software.

InfoWorld
375 Chchituate Road
Box 880
Framingham, MA 01701

$25 for 51 issues/year. Average no. instructional software reviews per issue: 5 (July-September only).

Interface Age
16704 Marquardt Avenue
Cerritos, CA 90701

Monthly.

Journal of Computers in Mathematics and Science Teaching
Assoc. for Computers in Mathematics and Science Teaching
P.O. Box 4455
Austin, TX 78765

Quarterly. Contains software listings, reviews, and discussions of computer use in instruction.

Journal of Courseware Review
The Apple Education Foundation
20525 Mariani Avenue
Cupertino, CA 95014

Three issues per year. Contains signed critical reviews of commercial educational programs for the Apple II.

Journal of Learning Disabilities
1331 E. Thunderhead Drive
Tucson, AZ 85718

Quarterly. Publishes reviews of software designed for handicapped populations.

Kilobaud Microcomputing
80 Pine Street
Peterborough, NH 03458

Monthly.

MACUL Journal
Michigan Assoc. for Computer Users in Learning
Wayne County, ISD
33500 Van Born Road
Wayne, MI 48184

$5 membership dues include annual issue of reviews which contained 113 reviews in 1980 and 143 in 1981. Plans for 1982 issue indefinite.

Mathematics Teacher
Nat'l. Council of Teachers of Mathematics
1906 Association Drive
Reston, VA 22091

$36 for 9 issues/year; $30 membership dues include subscription. Average no. reviews per issue: 6. Math programs only. Primarily for secondary schools and junior colleges.

Microcomputer Courseware/Microprocessor Games, EPIE Materials Report 98/99m.
EPIE Institute
P.O. Box 620
Stony Brook, NY 11790

Includes reviews of six commercial educational software packages.

Microcomputer Digest
103 Bridge Avenue
Bay Head, NJ 08742

Monthly (except August). Information and comparisons of hardware and software for teachers and educational administrators.

Microcomputers in Education
Queue
5 Chapel Hill Drive
Fairfield, CT 06432

$24 for 12 issues/year. Average no. reviews per issue: varies. Brief descriptions with occasional critical comments; includes references to software reviews in other journals.

Micro-Scope
Jem Research
Discovery Park
University of Victoria
Box 1700
Victoria, BC V8W 2Y2, Canada
(604)477-7246

$10 for 12 issues/year. Average no. reviews per issue: 3-6.

Nibble
P.O. Box 325
Lincoln, MA 01773

Eight issues/year. Program listings, tips, and software reviews.

Peelings II
P.O. Box 188
Las Cruces, NM 88001

$15 for 6 issues/year. Average no. instructional software reviews per issue: 5. Apple software only.

Personal Computing
P.O. Box 2941
Boulder, CO 80321

$18 for 12 issues/year. Average no. instructional software reviews per issue: 1-2.

Personal Computing
P.O. Box 1408
Riverton, NJ 08077

Monthly.

Pipeline
Conduit
University of Iowa
Box 388
Iowa City, IA 52244

$15 for 3 issues/year. Average no. reviews per issue: 8. Primarily college level but useful for advanced high school math and science classes.

Popular Computing
70 Main Street
Peterborough, NH 03458

$15 for 12 issues/year. Average no. instructional software reviews per issue: 102.

Purser's Magazine
P.O. Box 466
El Dorado, CA 95623
Quarterly. Reviews software for TRS-80, Apple, and Atari.

School Microware Reviews
Dresden Associates
Box 246
Dresden, ME 04342

$40 for 2 issues/year. Offers rating scale 1-10. Apple, PET and TRS-80 software only.

Software Review
Microform Review
520 Riverside Avenue
Westport, CT 06880
(203)226-6967

$38 for 2 issues/year; in 1983, $50 for 4 issues/year. Average reviews per issue: 206. Very detailed (6-10 pages long); with illustrations.

Talmis Courseware Ratings
115 North Oak Park Avenue
Oak Park, IL 60301

Contains teacher produced evaluations and ratings for commercially published educational software.

T.H.E. Journal
Technical Horizons in Education
P.O. Box 992
Acton, MA 01720
(617)263-3607

$15 for 12 issues/year; free for qualifying educators (administrators or department heads). Listings of newly-released software.

Window
469 Pleasant Street
Watertown, MA 02172

A magazine on disk, issued 5 times per year. Allows users to try out software.

Taken from Evaluation of Educational Software - A Guide to Guides, 1983, The Northeast Regional Exchange, Inc.

APPENDIX F

SAMPLE EVALUATION FORMS

1 - Courseware Needs Assessment Form

2 - Initial Screening Worksheet

3 - Software Evaluation Form

4 - TECC and California Library Classroom Evaluation of Microcomputer Courseware: Evaluation of Instructional Courseware

5 - CAI Evaluation

6 - MicroSIFT Courseware Description and Evaluation Forms

7 - Initial Evaluation Form and Teacher Evaluation Form

8 - Software Evaluation Form

9 - Courseware Evaluation Form

10 - Microcomputer Software Evaluation - Educational Courseware

11 - Microcomputer Software Evaluation - Application Courseware

12 - Scholastic Software Evaluation Form

13 - Post-Evaluation Form: Is the Software Useful in Your Classroom?

14 - Recommended for Purchase and Use Form

15 - Courseware Post-Use Feedback Form

16 - Student Response Form

17 - Post-Evaluation Form

Form #1

COURSEWARE NEEDS ASSESSMENT FORM

OVERVIEW

Before using this form, you should think through why you want to use software in the first place.

Address the following questions:

- What am I trying to accomplish?
- Can I better accomplish it using some other media?
- Is software the most appropriate means of teaching the intended material?

Software is needed for the following purposes:

_____ Instructional
_____ Information Management
_____ Programming
_____ Administrative
_____ Other ______________________________

BASIC REQUIREMENTS

HARDWARE SYSTEM: Courseware should run on: _________________________ computer

with: _________________________ memory

The following peripherals are available:

_____ single disk drive
_____ dual disk drive
_____ cassette reader
_____ color monitor
_____ monochrome monitor
_____ printer
_____ joystick
_____ game paddles
_____ light pen
_____ ____________________

Networking capability: _____ required

_____ not required

TARGET AUDIENCE AND CONTENT:

Grade/Age Range: __________________________

Subject Area: __________________________

Topic Emphasis: __________________________

____

COST CONSTRAINTS (note as many as apply): _____ per building

_____ per grade

_____ per class

_____ per student

_____ per subject area

INSTRUCTIONAL REQUIREMENTS

1. INSTRUCTIONAL TYPE:

Drill and Practice _____
Tutorial _____
Simulation _____
Problem Solving _____
Gaming _____
Tool _____

____________________ _____

2. STUDENT ABILITY:

Remedial _____
Average _____
Above Average _____
Mixed ability _____

____________________ _____

3. STUDENT ENTRY LEVEL COMPETENCIES:

Manipulating Joystick _____
Listening _____
Keyboarding _____

Following Directions ______
Composing ______
Reading Level ______

____________________ ______

4. GROUPING:
Class ______
Small Group/Pairs ______
Individuals ______

____________________ ______

5. CLASS TIME PER STUDENT USE:
5-10 minutes ______
15 minutes ______
20 minutes ______
30 minutes ______
40 minutes or more ______

____________________ ______

6. TOTAL PROGRAM USE PER STUDENT: ______
5-15 minutes ______
20-45 minutes ______
1 hour ______
More than one hour ______

____________________ ______

7. EVALUATION OF STUDENT USE:
Placement Test ______
Diagnostic Test ______
Achievement Test ______

____________________ ______

8. MANAGEMENT SYSTEM:
Required ______
Optional ______

9. TEACHER COMPUTER QUALIFICATIONS:
Limited ______
Average ______
Above average ______

10. TEACHER'S SUBJECT AREA COMPETENCIES:
Limited ______
Average ______
Above average ______

11. TEACHER'S GUIDE:
Required ______
Not required ______

12. PREPARATION AND FOLLOW-UP TIME:
Minimal ____
Moderate ____
Extensive ____

OTHER CONSIDERATIONS

13. PREVIEW PRIVILEGE

14. FULL WARRANTY

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Form #2

INITIAL SCREENING WORKSHEET

Titles in TESS warranting further consideration:

Title	Producer	Review Citations

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Form #3

SOFTWARE EVALUATION FORM

Reviewer's Name ______________________________ Date of Review __________

Address/Phone ______________________________ Phone ( ) __________

Program Title ______________________________ Medium: ___ 5-1/4 disk ___ tape

Necessary Equipment ______________________________

Producers ______________________________

Back-up Copy Policy ______________________________ Price __________

PART 1 - PROGRAM OVERVIEW AND DESCRIPTION

1. Subject area and specific topic ______________________________
2. Prerequisite skills necessary ______________________________
3. Appropriate grade level (circle) 1 2 3 4 5 6 7 8 9 10 11 12 college
   " reading level 1 2 3 4 5 6 7 8 9 10 11 12 college
4. Type of program (check one or more)

   ____ Simulation
   ____ Educational Game
   ____ Drill and Practice
   ____ Tutorial
   ____ Problem Solving
   ____ Authoring

   ____ Testing
   ____ Classroom Management
   ____ Remediation
   ____ Enrichment
   ____ Other (Specify)
   ____

5. Appropriate group instructional size: ___ individual ___ small group ___ class

PART 2 - EVALUATION CHECKLIST

Please check Yes, No or Not Applicable for each question below. To add information, or to clarify an answer, use "Comments" at the end of each section.

Yes No N/A *EDUCATIONAL CONTENT*

___ ___ ___ 1. Is the program content accurate?
___ ___ ___ 2. Is the program content appropriate for intended users?
___ ___ ___ 3. Is the difficulty level consistent for material, interest, and vocabulary?
___ ___ ___ 4. Is the program content free of racial, sexual, or political bias?

Comments:
____

Yes No N/A *PRESENTATION*

___ ___ ___ 1. Is the program free of technical problems?
___ ___ ___ 2. Are the instructions clear?
___ ___ ___ 3. Is the curriculum material logically presented and well organized?
___ ___ ___ 4. Do graphics, sound, and color, if used, enhance the instructional presentation?
___ ___ ___ 5. Is the frame display clear and easy to read?

Comments:
____

Yes No N/A *INTERACTION*

___ ___ ___ 1. Is the feedback effective and appropriate?
___ ___ ___ 2. Do cues and prompts help students to answer questions correctly?
___ ___ ___ 3. Can students access the program "menu" for help or to change activities?
___ ___ ___ 4. Can students control the pace and sequence of the program?
___ ___ ___ 5. Are there safeguards against students "bombing" the program by erroneous inputs?

Comments:
____

Yes No N/A *TEACHER USE*

___ ___ ___ 1. Is record-keeping possible (within the program or through documentation worksheets)?
___ ___ ___ 2. Does teacher have to monitor student use?
___ ___ ___ 3. Can teacher modify the program?
___ ___ ___ 4. Is the documentation clear and comprehensive?

Comments:
____

PART 3 - SUMMARY OF SOFTWARE

1. Is this program an appropriate instructional use of the computer? ____________
____

2. Is it appropriate in the context of corrections education? ____________
____

3. Briefly list the program's objectives. Are they clearly stated in the program or in the documentation? Are they educationally valuable? Are they achieved?
____
____
____

4. Briefly describe the program. Mention any special strengths or weaknesses.
____
____
____

PART 4 - OVERALL EVALUATION

CHECK ONE

____ Excellent program. Recommend without hesitation.
____ Pretty good program. Consider purchase.
____ Fair. But might want to wait for something better.
____ Not useful. Do not recommend purchase.

Adapted from the Software Evaluation Form developed by the Follett Quality Courseware Company in Crystal Lake, IL

Used in the Division of Corrections, State of Wisconsin when evaluating software for adult students enrolled in the GOAL program (curriculum that teaches basic skills and survival skills to adult inmates)

Form #4

TECC AND CALIFORNIA LIBRARY MEDIA CONSORTIUM FOR CLASSROOM EVALUATION OF MICROCOMPUTER COURSEWARE

EVALUATION OF INSTRUCTIONAL COURSEWARE
(See separate form for Management software)

1984 Revision

A. DESCRIPTIVE INFORMATION

This review is for (choose one only):

_______ (a) An entire disk.
Disk title: _______________
Package title: _______________
Date/Version #: _______________

_______ (b) One program of several on a disk.
Title: _______________
Title of disk: _______________
Package title: _______________
Date/Version #: _______________

_______ (c) An entire package of multiple disks.
Title: _______________
Date/Version #: _______________

Publisher: _______________
Microcomputer used (brand/model): _______________
Appropriate subject area/s: _______________

Approp. grade levels: (circle) K 1 2 3 4 5 6 7 8 9 10 11 12 Coll. Teacher
Type of program (Check all that apply):

_____Demonstration
_____Educational Game
_____Drill/Practice
_____Tutorial
_____Problem-solving
_____Simulation
_____Testing
_____Teacher Utility
_____Other: ___________

Yes	No	Not Applic.	
			CONTENT:
___	___	___	7. May user choose from levels of difficulty?
___	___	___	8. Branches to easier or harder material in response to student performance?
___	___	___	9. Factually correct?
___	___	___	10. Punctuation, spelling, grammar correct?
___	___	___	11. Free of excessive violence or competition?
___	___	___	12. Free of stereotypes - race, gender, ethnic, age, handicapped?
___	___	___	13. Interest, difficulty, typing, vocabulary levels are appropriate?
___	___	___	14. Modifications of data, speed, words lists, etc., by instructor are possible?
___	___	___	15. Responses to errors are helpful?
___	___	___	16. Responses to student success are positive and appropriate?
___	___	___	17. Responses are non-judgmental?

CONTENT: ___EXCELLENT ___GOOD ___WEAK ___NOT ACCEPTABLE

EASE OF USE:

___	___	___	18. Answers may be corrected by user before continuing with program?
___	___	___	19. Instructions within program are clear, complete, concise?
___	___	___	20. Instructions can be skipped or recalled to screen?
___	___	___	21. Instructions on how to end program, start over, are given?
___	___	___	22. Menu allows user to access specific parts of program?
___	___	___	23. Paging speed and sequence can be controlled by user?
___	___	___	24. Screens are neat, attractive, well-spaced?
___	___	___	25. Sound, if present, is appropriate and may be turned off?
___	___	___	26. Classroom management, if any, is easy to use?

EASE OF USE: ___EXCELLENT ___GOOD ___WEAK ___NOT ACCEPTABLE

MOTIVATIONAL DEVICES (Check all which are used):

___color
___game format
___graphics for instruction
___graphics for reward
___personalization
___random order
___scoring
___sound
___timing

DOCUMENTATION (Check all which are provided in the package):

___instruction manual
___instructional objectives
___instructions appear on the screen
___student worksheets
___suggested activities
___teacher's guide
___tests
___workbook
___none

EVALUATION COMMENTS

Describe any special strengths of the program:

Comments/Concerns/Questions:

Compare with similar programs:

Describe the program (content, main objectives):

Describe method of presentation (how program interacts with students):

Describe management system, if any, including number of students/classes permitted by program:

Describe scoring or performance reporting, if any:

Describe how you used this program within your curriculum:

B. EVALUATIVE INFORMATION:

STUDENT RESPONSE

Grade levels in which used:
Subject:

Behavior observed which indicates learning took place:

Other reactions of students:

Any problems experienced, special preparation of students required:

EVALUATION CHECKLIST

Yes	No	Not Applic.	
			GENERAL DESIGN:
___	___	___	1. Creative, innovative use of the computer?
___	___	___	2. Effective, appropriate use of the computer?
___	___	___	3. Follows sound instructional organization?
___	___	___	4. Fits well into the curriculum?
___	___	___	5. Free of programming errors, problems?
___	___	___	6. Meets publisher's objectives?

GENERAL DESIGN: ___EXCELLENT ___GOOD ___WEAK ___NOT ACCEPTABLE

OVERALL OPINION

GREAT PROGRAM. I RECOMMEND IT HIGHLY!
PRETTY GOOD. USEFUL.
OK, BUT YOU MIGHT WAIT FOR A BETTER ONE.
WOULD SELECT ONLY IF MODIFICATIONS WERE MADE.
NOT USEFUL.

REVIEWER INFORMATION

Reviewed by: ______________________________ **Date:** __________
Grade Level: __________ **Subjects:** ______________________________ **Position:** __________
School: ______________________________ **District:** ______________________________
Town: ______________________________
May we use your name in the printed review? **Yes**___ **No**___

(Fold here and staple to return—Address on outside)

This form is used by teachers when previewing software prior to purchase.

Form #5

This form is used by teachers to preview software for their classroom or to determine whether the software is adopted by the state department.

Division of Media Evaluation Services
Educational Media and Technology Services Area
State Department of Public Instruction
North Carolina

CAI EVALUATION

Evaluator ____________________ Date ______________ Subject ______________

Check one: Recommended ____ Not recommended ____

Program Scope: K 1 2 3 4 5 6 7 8 9 10 11 12. Remedial. Teacher use only.

Title ______________________________ Producer ______________________

Series Title ______________________________ ______________________

Copyright Date __________ Price ______________ Number of Disks ______

Distributor ______________ Equipment ______________________

Guide ______________ Ancillary Materials ______________________

Back-up/Replacement Availability ______________________________

TECHNICAL INFORMATION

Mode/Technique: What is the instructional mode? Check one or more: tutorial____; drill and practice____; simulation____; problem solving____; game____.

Access: After entering the program, how does the user select lesson/activity?
Menu____; pretest____; sequentially____; preset by teacher____.
Other______________, describe ______________________________.

How does user control speed of presentation? Check as appropriate:
spacebar/return/enter____; option set by teacher____; option set by student____; no control____; other________, describe ______________
____
____.

Help: How does user receive help if *he does not know an answer?
Program automatically branches to: tutorial____; review____; hint____.
Student can request help segment____.
Student is instructed to call teacher before proceeding____.
There is no help offered____.

Where is this information explained?
On screen____; in documentation____on page____.

Technical Information (Cont'd.)

Feedback: What kind of response does the student receive for correct answers?

What kind of response does the student receive for incorrect answers?

Randomization: To what extent does the program vary for a repeat user? Are exercises repeated exactly, are items rearranged, or is new material generated?

Branching: How does the program vary the questions or problems in response to student input? (Does the program present more difficult questions after a series of correct answers? Does the program send the student to a tutorial segment after an incorrect answer? Does the program send the student to an easier level of work?)

Recordkeeping: Describe the recordkeeping available for students.

Describe the recordkeeping available for teachers.

What records can be printed?

Presentation: Describe screen image in terms of size of picture, size of print, complexity, spacing, etc.

Describe accompanying sound noting strongest and weakest aspects.

CONTENT INFORMATION

Documentation: Describe information contained in documentation (the guide and other support materials). Which of the following does it include? Check as appropriate: objectives_____; equipment operation_____; example of contents_____; suggestions for use_____; grade level_____.

What are the strengths and/or weaknesses of the guide and ancillary materials? (Answer after running program.)

Content: Summarize the content and objectives of the total package.

Note unique features which distinguish it from other courseware. (PLEASE GIVE SPECIFIC DETAILS.)

Motivation: How does the program hold the user's attention?

How does the program encourage the user to answer correctly?

Strengths: Describe specific characteristics or features of the program which make it an appropriate instructional tool, e.g., graphics, management, responsive branching, teacher input.

Which competency or performance goals does it support?

Content Information (Cont'd.)

Weaknesses: Describe specific characteristics or features of the program which detract from its use as an instructional tool, e.g., worksheet format, poorly designed graphics, inappropriately easy or difficult directions, errors.

Prerequisites: What personal abilities or background information should students have before using the program?

Uses: Explain how a teacher would best integrate this program into an existing curriculum or how the program could enrich or simplify instruction. (PLEASE GIVE CONCRETE SUGGESTIONS.)

To my knowledge no attempt has been made to copy this program ______________________
(Signature of Evaluator)

Date ______________________

EXPLANATION OF TERMS USED ON CAI EVALUATION FORM

CONTENT: Summarize activities and content of the total package. Refer to the instructional mode, the topic or subject area, and the target audience. Identify instructional and behavioral objectives met by this program. Some may be stated in the teacher's guide or manual. Some may be identified on the screen as a lesson begins. The extent to which these objectives are actually met can be judged only by running the program; therefore, they should not be included in the final evluation until after the program has been thoroughly previewed. You, the evaluator, may observe other objectives specifically related to North Carolina competency goals. Please note also, here or in the WEAKNESSES section, those objectives claimed by the publisher, but not satisfactorily met.

WEAKNESSES: Comment here about programming or design weaknesses and errors. If possible note exactly where errors, distractions, or inconsistencies occur, and describe the steps you followed to reach these weaknesses. This is also the place to explain why the program is not suitable as instructional or supplementary material--in North Carolina classrooms.

STRENGTHS: Note here any outstanding characteristics or features which make this program unusual or especially useful.

USES: In this segment of the evaluation form, explain how teachers can assign the program to help student meet competency goals or the program's objectives. Include special uses (remedial, special education); individual or group use; introduction, extension, or review of classroom lesson; independent tutorial for advanced students; or as enrichment.

1/20/86

The CAI Evaluation form is used by teachers to preview software for their classroom or to determine whether the software is adopted by the state department.

Form #6

microSIFT COURSEWARE DESCRIPTION

NORTHWEST REGIONAL
EDUCATIONAL LABORATORY

Title Version Evaluated
Producer Cost
Subject/Topics
Grade Level(s) (circle) pre-1 1 2 3 4 5 6 7 8 9 10 11 12 post-secondary
Required Hardware
Available for Hard Disk? ☐ Yes ☐ No ☐ Unknown Licensing Available? ☐ Yes ☐ No ☐ Unknown
Required Software
Software protected? ☐ Yes ☐ No Medium of Transfer: ☐ Tape Cassette ☐ ROM Cartridge ☐ 5¼" Flexible Disk ☐ 8" Flexible Disk
Back Up Policy
Preview Policy
Producer's field test data is available ☐ On Request ☐ With Package ☐ Not Available

INSTRUCTIONAL PURPOSES & TECHNIQUES

(Please check all applicable):

- ☐ Remediation
- ☐ Standard Instruction
- ☐ Enrichment
- ☐ Assessment
- ☐ Instructional Management
- ☐ Authoring
- ☐ Drill and Practice
- ☐ Tutorial
- ☐ Information Retrieval
- ☐ Game
- ☐ Simulation
- ☐ Problem Solving
- ☐ Other

DOCUMENTATION AVAILABLE:

Circle P-(Program) or S-(Supplementary Material)

P S Suggested grade/ability level(s)
P S Instructional objectives
P S Prerequisite skills or activities
P S Sample program output
P S Program operating instructions
P S Pre-test
P S Post-test
P S Teacher's information
P S Resource/reference information
P S Student's instructions
P S Student worksheets
P S Textbook correlation
P S Follow-up activities
P S Other

OBJECTIVES: ☐ Stated ☐ Inferred

PREREQUISITES: ☐ Stated ☐ Inferred

Describe package **CONTENT AND STRUCTURE**, including record-keeping and reporting functions:

These forms were developed by the Technology program of the Northwest Regional Educational Laboratory under contract with the National Institute of Education. Copies of the forms and detailed instructions regarding their use are available in a booklet entitled "The Evaluator's Guide to Microcomputer-Based Instructional Packages" from ICCE, Univ. of Oregon, 1781 Agate St., Eugene, OR 97403, $3.00 each.

microSIFT COURSEWARE EVALUATION

NORTHWEST REGIONAL EDUCATIONAL LABORATORY

Package Title ______________________ Producer ______________________

Evaluator's Level and Subject Taught ______________________

Evaluator Name ______________________ Organization ______________________

Date ______________________ ☐ Check this box if this evaluation is based partly on your observation of student use of this package.

Reviewer Statement of Non-Violation of Copyright

The producer's copyright was respected during this evaluation, and I did not copy or attempt to copy any portion of this package.

Signature______________________ Date______________________

SA-Strongly Agree A-Agree D-Disagree SD-Strongly Disagree NA-Not Applicable

Please include comments on individual items on the reverse page.

CONTENT CHARACTERISTICS

1. SA A D SD NA The content is accurate. (p. 16)
2. SA A D SD NA The content has educational value. (p. 16)
3. SA A D SD NA The content is free of race, ethnic, sex and other stereotypes. (p. 16)

INSTRUCTIONAL CHARACTERISTICS

4. SA A D SD NA The purpose of the package is well defined. (p. 17)
5. SA A D SD NA The package achieves its defined purpose. (p. 17)
6. SA A D SD NA Presentation of content is [illegible] and logical. (p. 17)
7. SA A D SD NA The level of difficulty is appropriate for the target audience. (p. 18)
8. SA A D SD NA Graphics/color/sound are used for appropriate instructional reasons. (p. 18)

QUALITY

Write a number from 1 (low) to 5 (high) which represents your judgment of the quality of the package in each division:

______ Content Characteristics

______ Instructional Characteristics

______ Technical Characteristics

9. SA A D SD NA Use of the package is motivational. (p. 19)
10. SA A D SD NA The package effectively stimulates student creativity. (p. 19)
11. SA A D SD NA Feedback on student responses is effectively employed. (p. 20)
12. SA A D SD NA The learner controls the rate and sequence of presentation and review. (p. 20)
13. SA A D SD NA Instruction is integrated with previous student experience. (p. 29)
14. SA A D SD NA Learning can be generalized to an appropriate range of situations. (p. 29)

TECHNICAL CHARACTERISTICS

15. SA A D SD NA The user support materials are comprehensive. (p. 30)
16. SA A D SD NA The user support materials are effective. (p. 31)
17. SA A D SD NA Information displays are effective. (p. 31)
18. SA A D SD NA Intended users can easily and independently operate the program. (p. 32)
19. SA A D SD NA Teachers can easily employ the package. (p. 34)
20. SA A D SD NA The program appropriately uses relevant computer capabilities. (p. 34)
21. SA A D SD NA The program is reliable in normal use. (p. 35)

RECOMMENDATIONS

☐ I highly recommend this package.

☐ I would use or recommend use of this package with little or no change. (Note suggestions for effective use below.)

☐ I would use or recommend use of this package only if certain changes were made. (Note changes under Weaknesses or Other Comments.)

☐ I would not use or recommend this package. (Note reasons under Weaknesses.)

Describe the potential use of the package in classroom settings:

Estimate the amount of time a student would need to work with the package in order to achieve the objectives:
(Can be total time, time per day, time range or other indicator.)

Strengths:

Weaknesses:

Other Comments:

Form #7

INITIAL EVALUATION FORM*

TITLE: ____________________
DESCRIPTION: ____________________
____
PRODUCED BY: ____________________
SERIES OR SINGLE DISK: SINGLE DISK ________/# IN SERIES ____
PURCHASE DATE: ____________________
INITIAL COST: ____________________
REPLACEMENT COST: ____________________
NUMBER OF COPIES: ____________________
PERIPHERALS NEEDED: ____________________
COLOR: Y / N
SOUND: Y / N
GRAPHICS: Y / N
TWO SIDED DISK: Y / N
DOCUMENTATION: ON DISK/SEPARATE MANUAL/BOTH
SUPPLEMENTARY MATERIALS:
DITTO/TRANSPARENCY/WORKSHEETS/TEACHER'S MANUAL
TIME NEEDED FOR LESSION: ____________________
LESSONS PER DISK OR SERIES: ____________________
SEQUENTIAL: Y / N
ACCESS: MENU / CATALOG
READING GRADE LEVEL: ____________________
SUBJECT GRADE LEVEL: ____________________

---

*From A. Rupright and S. Timmer, Waukesha County Technical Institute, Pewaukee, Wisconsin.

TEACHER EVALUATION FORM

INSTRUCTIONAL TECHNIQUES

- ___DRILL AND PRACTICE
- ___UTILITY
- ___PROBLEM SOLVING
- ___DIAGNOSTIC/PRESCRIPTIVE
- ___MANAGEMENT
- ___INFORMATION RETENTION
- ___TUTORIAL
- ___SIMULATION
- ___REMEDIATION
- ___ENRICHMENT
- ___INSTRUCTIONAL GAMING

INSTRUCTIONAL PURPOSE

_REMEDIATION _STANDARD INSTRUCTION _ENRICHMENT
_READING RATE _READING COMPREHENSION _VOCABULARY

REVIEW AND RATING

Circle the response (1–5) that best reflects your evaluation of each item. Read the explanation in the inservice if you need clarification for any item. Circle NA if the item does not apply to this progrm

Item	Teacher's View	Student's View
FLEXIBILITY	NA 1 2 3 4 5	NA 1 2 3 4 5
INTERESTING	NA 1 2 3 4 5	NA 1 2 3 4 5
EASE OF OPERATION	NA 1 2 3 4 5	NA 1 2 3 4 5
EDUCATIONAL VALUE	NA 1 2 3 4 5	NA 1 2 3 4 5
ACCURACY OF CONTENT	NA 1 2 3 4 5	NA 1 2 3 4 5
FEEDBACK	NA 1 2 3 4 5	NA 1 2 3 4 5
REMEDIATES	NA 1 2 3 4 5	NA 1 2 3 4 5
APPROPRIATE FOR COMPUTER USE	NA 1 2 3 4 5	NA 1 2 3 4 5
APPROPRIATENESS OF CONTENT	NA 1 2 3 4 5	NA 1 2 3 4 5
CONTROLLABLE PACING	NA 1 2 3 4 5	NA 1 2 3 4 5
RECORD KEEPING	NA 1 2 3 4 5	NA 1 2 3 4 5
RELIABILITY	NA 1 2 3 4 5	NA 1 2 3 4 5
POSITIVE REPETITIVENESS	NA 1 2 3 4 5	NA 1 2 3 4 5
CLARITY OF INSTRUCTIONS	NA 1 2 3 4 5	NA 1 2 3 4 5
EFFECTIVENESS OF SUPPORT MATERIAL	NA 1 2 3 4 5	NA 1 2 3 4 5
MOTIVATIONAL	NA 1 2 3 4 5	NA 1 2 3 4 5

RECOMMENDATION:

Please include strengths, weaknesses, and potential uses.

CONCLUSION:

Would you use this program?

This is another example of a preview form which would be completed by the teacher prior to purchase.

Form #8

Software Evaluation Form

Reviewer's Name: ____________________ **Date of Review:** ____________________

Address/Phone: ____________________ (   ) ____________________

Program Title ____________________ **Medium:** ___ **5" disk;** ___ **8" disk;**

___ **cartridge;** ___ **tape**

Package Title ____________________ **Copyright Date (if any)** ____________________

Microcomputer (brand, model, memory) ____________________

Necessary Hardware ____________________ **Necessary Software** ____________________

Producer ____________________ **Author(s)** ____________________

Back-up Copy Policy ____________________ **Cost** ____________________

PART 1

Program Overview and Description

1. Subject area and specific topic ____________________
2. Prerequisite skills necessary ____________________
3. Appropriate grade level (circle) 1 2 3 4 5 6 7 8 9 10 11 12 college
4. Type of program (check one or more)
   - ___ Simulation
   - ___ Educational Game
   - ___ Drill and Practice
   - ___ Tutorial
   - ___ Problem Solving
   - ___ Authoring System
   - ___ Testing
   - ___ Classroom Management
   - ___ Other (specify) ____________________
   - ___ Remediation
   - ___ Enrichment
5. Appropriate group instructional size: ___ individual ___ small group ___ class
6. Is this program an appropriate instructional use of the computer? ____________________
7. Briefly list the program's objectives. Are they clearly stated in the program or in the documentation? Are they educationally valuable? Are they achieved?
8. Briefly describe the program. Mention any special strengths or weaknesses.

From Electronic Learning, October 1984

PART 2

Evaluation Checklist

Please check Yes, No, or Not Applicable for each question below. To add information, or to clarify an answer, use "Comments" at the end of each section.

Yes	No	N/A	EDUCATIONAL CONTENT
____	____	____	1. Is the program content accurate?
____	____	____	2. Is the program content appropriate for intended users?
____	____	____	3. Is the difficulty level consistent for material, interest, and vocabulary?
____	____	____	4. Is the program content free of racial, sexual, or political bias?

Comments: ______________________________

____

Yes	No	N/A	PRESENTATION
____	____	____	1. Is the program free of technical problems?
____	____	____	2. Are the instructions clear?
____	____	____	3. Is the curriculum material logically presented and well organized?
____	____	____	4. Do graphics, sound, and color, if used, enhance the instructional presentation?
____	____	____	5. Is the frame display clear and easy to read?

Comments: ______________________________

____

Yes	No	N/A	INTERACTION
____	____	____	1. Is the feedback effective and appropriate?
____	____	____	2. Do cues and prompts help students to answer questions correctly?
____	____	____	3. Can students access the program "menu" for help or to change activities?
____	____	____	4. Can students control the pace and sequence of the program?
____	____	____	5. Are there safeguards against students "bombing" the program by erroneous inputs?

Comments: ______________________________

____

Yes	No	N/A	TEACHER USE
____	____	____	1. Is record-keeping possible (within the program or through documentation worksheets)?
____	____	____	2. Does teacher have to monitor student use?
____	____	____	3. Can teacher modify the program?
____	____	____	4. Is the documentation clear and comprehensive?

Comments: ______________________________

____

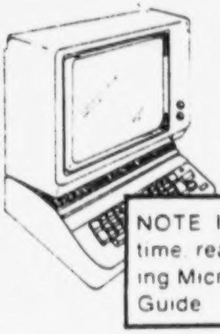
PART 3

Overall Evaluation

CHECK ONE.

____Excellent program. Recommend without hesitation.
____Pretty good program. Consider purchase.
____Fair. But might want to wait for something better.
____Not useful. Do not recommend purchase.

This short form is completed by the teacher prior to purchase.



Form #9

Part A: Courseware Description

COURSEWARE EVALUATION FORM

NOTE If you are using this form for the first time, read the instructions in the accompanying Microcomputer Courseware Evaluation Guide

Evaluator ________________
Position ________________
Date ________________

Part A: Courseware Description

In the following sections, record descriptive information about the courseware that you are evaluating.

I IDENTIFICATION

Program Title ________________ Date ________
Series Title ________________
Vocational Area(s) ________________
Subject Area(s) ________________
Topic(s) ________________
Developing Agency ________________
Street or P O Box ________________
City ________ State ________ Zip ________ Phone(   ) ________
Author(s) ________________
Programmer(s) ________________

II HARDWARE REQUIREMENTS

Microcomputer* ________________
(brand/model)

K Memory Required ________
(number)

Medium of Transfer (include number of each):

- ___ Tape cassette
- ___ ROM cartridge
- ___ 5¼" Flexible disk
- ___ 8" Flexible disk
- ___ Other ________ (specify)

Programming Language ________ DOS Specifications ________

Other Specifications ________________

Peripherals Needed (check all that apply):

- ___ Color monitor
- ___ One disk drive
- ___ Two disk drives
- ___ Plotter
- ___ Game paddle(s)
- ___ Joystick(s)
- ___ Modem
- ___ Mouse
- ___ Printer
- ___ Graphics tablet
- ___ Light pen
- ___ Voice/sound instrument
- ___ Clock
- ___ Video disk
- ___ Touch screen
- ___ Ten-key number pad
- ___ Other ________ (specify)

*NOTE: Provide the above information for any additional hardware on which this program can be used ________________

____

____

This form was written specifically for uses in vocational education.

III. PROGRAM FEATURES (check all that apply):

- ___ Network version provided
- ___ Multiple copies required
- ___ Program can be modified
- ___ Program protected
- ___ Data disk needed
- ___ Field-test data available

IV. INSTRUCTIONAL SETTING

Program mode (check all that apply):

- ___ Application
- ___ Drill and practice
- ___ Educational gaming
- ___ Simulation
- ___ Tutorial
- ___ Other ________ (specify)

Student Target Population (check all that apply):

- ___ Regular
- ___ Disadvantaged
- ___ Handicapped
- ___ Limited English
- ___ Bilingual
- ___ Gifted

Grade Level (check all that apply):

- ___ K-6
- ___ 7-8
- ___ 9-10
- ___ 11-12
- ___ 13-14
- ___ Adult
- ___ Higher Education

Instructional Grouping (check all that apply):

- ___ Individual
- ___ Small group (up to 4)
- ___ Large group (4 or more)
- ___ competitive interaction
- ___ cooperative interaction

Prerequisite Student Skills (specify) ________________________________

Accompanying Materials (specify types):

Documentation ________________________________

Student support materials ________________________________

Teacher support materials ________________________________

Correlated materials ________________________________

Estimated Time for Use ________________________________

V. AVAILABILITY

___ Free ________ (copies)

___ Loan ________ (time)

___ Duplication (requestor supplies disk)

___ Sale $________

___ Rent $________ ________ (time)

Copyright Restrictions (explain) ________________________________

Back-up Policy (explain) ________________________________

Preview Policy (explain) ________________________________

Update Policy (explain) ________________________________

Contact ________________________________

Street or P.O. Box ________________________________

City ____________ State ________ Zip ________ Phone (   ) ________

Part B: Courseware Evaluation Criteria

Indicate the applicability of each section to the courseware being evaluated by checking either "___ A" (applicable) or "___ N/A" (not applicable). If a section is not applicable, proceed to the next section. If a section is applicable, check the column that indicates how well the courseware meets each criterion. Include any comments.

	YES	SOME-WHAT	NO	N/A	COMMENTS
I. SUBJECT MATTER ___ A ___ N/A					
1. Subject matter has educational value.					
2. Student objectives are stated.					
3. Subject matter is accurate.					
4. Subject matter is logically presented.					
5. Subject matter is free of race, ethnic, sex, and other stereotypes.					
6. Subject matter is on the level of the students.					
7. Information and skills presented are comparable to those used in the home, business, or industry.					
8. Subject matter motivates students to learn.					
9. Subject matter is reviewed and summarized.					
10. Program utilizes the unique capabilities of the microcomputer to present the subject matter.					
II. TECHNICAL PRESENTATION ___ A ___ N/A					
1. Program is free of technical problems.					
2. Presentation rate is adequate to maintain interest.					
3. Information on the screen is easy to read.					
4. Program is free of spelling and grammatical errors.					
5. Program instructions are easy to follow.					
6. Color increases the instructional value of the program.					
7. Audio increases the instructional value of the program.					
8. Graphics increase the instructional value of the program.					

	YES	SOME-WHAT	NO	N/A	COMMENTS
III STUDENT INTERACTION ___ A ___ N/A					
1 Students can use the program with minimal assistance					
2 Students are actively involved in the program					
3 Students control the pace of the program					
4 Students can access the program "menu(s)" to change activities					
5 Students are permitted to change answers					
6 Methods of responding correspond to the level of the program					
7 Students' errors of entry are processed so that the program continues to run					
8 Students can access available "help" and "hint" options at any time					
9 Students can enter or exit the program as desired					
10 Students control the sequence of the program					
IV PROGRAM INTERACTION ___ A ___ N/A					
1 Feedback is immediate					
2 Cues and prompts are provided to assist students in answering correctly					
3. Feedback reinforces the correct responses					
4 Feedback is nonthreatening.					
5. Program helps students understand wrong answers.					
6. Program gives the correct answer after a reasonable number of tries.					
7 Positive reinforcement is varied.					
8. Program has the ability to branch/loop depending upon students' performance.					
9 Feedback is on the level of the student.					
V. STUDENT EVALUATION ___ A ___ N/A					
1. Evaluation provides a means for measuring attainment of objectives.					
2. Program reports which items were missed and which were correct.					

	YES	SOME-WHAT	NO	N/A	COMMENTS
V STUDENT EVALUATION—*Continued*					
3 Individual student performance results are available to the teacher					
4 Class performance results are available to the teacher					
5 Program provides for printed copies of evaluations					
6 Test item formats are suited to the material being tested					
7 Test items are clearly stated					
8 Test item bank is provided					
VI DOCUMENTATION __ A __ N/A					
1 Documentation is easy to understand					
2 Documentation is accurate					
3 Student objectives are stated					
4 Underlying concepts are outlined					
5 Skills to be developed are specified					
6 Procedures for integrating the program into the curriculum are provided					
7 Follow-up activities are suggested					
8 Documentation explains the intended use of support materials					
9 Sufficient information is provided to operate the program.					
VII WORK BEHAVIORS __ A __ N/A					
1 Program helps students identify their vocational skills					
2 Program promotes pride in work					
3 Program promotes productivity					
4 Program encourages good work habits.					
5 Problem solving is encouraged					
6 Program promotes good human relations skills					
7 Program provides an opportunity for work satisfaction and self fulfillment.					
8 Program encourages creativity.					

Part B: Courseware Evaluation Criteria

Part B: Courseware Evaluation Criteria

	YES	SOME-WHAT	NO	N/A	COMMENTS
VIII APPLICATION PROGRAMS ___ A ___ N/A (to be completed for application programs **only**)					
1. Program is adaptable to the needs of the student.					
2. Commands are easily remembered.					
3. Information is easily manipulated.					
4. Corrections are easy to make.					
5. Program includes all necessary variables.					
6. Program performs reliably.					
7. Program efficiently achieves its intended purpose.					
8. Trial data are supplied for learning to run the program.					
9. Program provides for use of printer when hard copy of information is advantageous.					
10. Program moves from operation to operation efficiently.					
11. Program is compatible with other application programs.					
12. Program has a supplementary tutorial program available.					

Part C: Courseware Evaluation Summary

1 SUMMARY COMMENTS

Identify strengths of the courseware:

Identify weaknesses of the courseware

Describe uses of the courseware in an instructional setting:

2 SUMMARY OF SECTION

Rate the quality of the courseware for each applicable section of this form by checking the appropriate column; if not applicable, check N/A.

	YES	SOME-WHAT	NO	N/A
I. SUBJECT MATTER: Content has educational value.				
II. TECHNICAL PRESENTATION: Program is free of malfunctions.				
III. STUDENT INTERACTION: Students are actively involved with the program.				
IV. PROGRAM INTERACTION: Feedback is effectively employed.				
V. STUDENT EVALUATION: Evaluation adequately measures student progress.				
VI. DOCUMENTATION: Documentation is sufficient to run the program.				
VII. WORK BEHAVIORS: Program assists students in developing positive work attitudes and skills.				
VIII. APPLICATION PROGRAMS: Program performs the task for which it is intended.				

Part C: Courseware Evaluation Summary

3. FINAL RECOMMENDATION

Check your recommendation for the courseware and explain your reasons below.

___ Highly recommend
___ Recommend

___ Recommend with reservations
___ Do not recommend

____

____

TO ORDER ADDITIONAL COPIES OF THIS PUBLICATION USE—	ORDER NUMBER	PRICE
• Microcomputer Courseware Evaluation: Form and Guide for Vocational and Technical Education	SN 44	$2.50
TO ORDER RELATED PUBLICATIONS, REFER TO—		
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Microcomputer Courseware Evaluation Guide: Form and Guide
for Vocational and Technical Education

Developed by:
Shirley A. Chase
Ruth Gordon
Richard C. Makin

For Further Information Contact:
The Program Information Office
National Center for Research in Vocational Education
The Ohio State University
1960 Kenny Road
Columbus, Ohio 43210
800-848-4815 or 614-486-3655 in Ohio

Form #10

MICROCOMPUTER SOFTWARE EVALUATION*
EDUCATIONAL COURSEWARE
B. JUNE SCHMIDT

DESCRIPTION

Package Title ________________________________

Version ________________ Cost ________________

Producer ________________________________

Subject Area ____________ Grade/Ability Level ____________

Specific Topic ________________________________

Dewey Decimal ________________________________

ERIC Descriptors ________________________________

____

Medium of transfer: ____5¼" Flex. Disk ____Tape Cassette
____8" Flex. Disk ____Other ____________
____
(Specify)

Required Hardware:

Required Software:

---

*Adapted from *Evaluator's Guide for Microcomputer-Based Instructional Packages.* Portland, Ore.: MicroSIFT, Computer Technology Program, Northwest Regional Educational Laboratory, 1981 (ED 206 330).

Type of package:
____ Single Program
____ Integrated Series ________________________________
____
(Explain)

INSTRUCTIONAL INFORMATION

Instructional purpose: (Please check all applicable.)

____ Remediation ____Standard Instruction ____Enrichment

Instructional Techniques: (Please check *all* applicable descriptions.)

__Drill and Practice
__Tutorial
__Information Retrieval
__Game
__Simulation
__Problem Solving
__Learning Management
__Utility
__Other ______________
____
(Specify)

Documentation available: (Circle *all* that are available in the computer program (P) or in the supplementary materials (S).)

P S Suggested grade/ability level(s)
P S Instructional objectives
P S Prerequisite skills or activities
P S Sample program output
P S Program operating instructions
P S Pretest
P S Posttest
P S Teacher's information
P S Resource/reference information
P S Student's instructions
P S Student's worksheets
P S Relationship to standard textbooks
P S Follow-up activities
P S Other ______________

Is listing and alteration of the computer program allowed?

EVALUATION

RATING: Circle the letter abbreviation which best reflects your judgment. (Use the space following each item for comments.)

IMPORTANCE: Circle the letter which reflects your judgment of the relative importance of the item in this evaluation.

☐ Check this box if this evaluation is based partly on your observation of student use of this package.

	RATING:					IMPORTANCE (OPT)		
	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	NOT APPLICABLE	HIGHER	LOWER	
CONTENT	SA	A	D	SD	NA	H	L	1. The content is accurate.
	SA	A	D	SD	NA	H	L	2. The content has educational value.
	SA	A	D	SD	NA	H	L	3. The content is free of race, ethnic, sex, and other stereotypes.
INSTRUCTIONAL QUALITY	SA	A	D	SD	NA	H	L	4. The purpose of this package is well defined.
	SA	A	D	SD	NA	H	L	5. The package achieves its defined purpose.
	SA	A	D	SD	NA	H	L	6. Presentation of content is clear and logical.
	SA	A	D	SD	NA	H	L	7. The level of difficulty is appropriate for the target audience.
	SA	A	D	SD	NA	H	L	8. Graphics/color/sound are used for apppropriate instructional reasons.
	SA	A	D	SD	NA	H	L	9. Use of the package is motivational.
	SA	A	D	SD	NA	H	L	10. The package effectively stimulates student creativity.
	SA	A	D	SD	NA	H	L	11. Feedback on student responses is effectively employed.
	SA	A	D	SD	NA	H	L	12. The learner controls the rate and sequence of presentation and review.
	SA	A	D	SD	NA	H	L	13. Instruction is integrated with previous student experience.
	SA	A	D	SD	NA	H	L	14. Learning is generalizable to an appropriate range of situations.
TECHNICAL QUALITY	SA	A	D	SD	NA	H	L	15. The user-support materials are comprehensive.
	SA	A	D	SD	NA	H	L	16. The user-support materials are effective.
	SA	A	D	SD	NA	H	L	17. Information displays are effective.
	SA	A	D	SD	NA	H	L	18. Intended users can easily and independently operate the program.
	SA	A	D	SD	NA	H	L	19. Teachers can easily employ the package.
	SA	A	D	SD	NA	H	L	20. The program appropriately uses relevant computer capabilities.
	SA	A	D	SD	NA	H	L	21. The program is reliable in normal use.

22. ______I would use or recommend use of this package. (Note suggestions for effective use in item 25.)
______I would not use or recommend this package.

23. Describe the major strengths of the software package:

---

24. Describe the major weaknesses:

Package Title____________________Version____________________

Reviewer's Name____________________Date____________________

25. Describe the potential use of the package in classroom settings. (NOTE: Complete items 1–21 before completing this item.)

This form should be used by teachers prior to purchase.

Form #11

MICROCOMPUTER SOFTWARE EVALUATION
APPLICATION SOFTWARE*
B. JUNE SCHMIDT

DESCRIPTION

Package Title ______________________________

Version ______________ Cost ______________

Producer ______________________________

Subject Area ______________ Grade/Ability Level ______________

Purpose:

Medium of transfer: _____5¼" Flex. Disk _____Tape Cassette

_____8" Flex. Disk _____Other ______________

______________________ (Specify)

Required Hardware:

Required Software:

*Developed by B. June Schmidt, Virginig Polytechnic Institute and State University, Division of Vocational & Technical Education, 213 Lane Hall, Blacksburg, Virginia 24061.

Type of package:

____ Single Program

____ Integrated Series ______________________________

____
(Explain)

EVALUATION

RATING: Circle the letter abbreviation which best reflects your judgment. (Use the space following each item for comments.)

IMPORTANCE: Circle the letter which reflects your judgment of the relative imortance of the item in this evaluation.

☐ Check this box if this evaluation is based partly on your observation of student use of this package.

	RATING:					IMPORTANCE (OPT)		
	STRONGLY AGREE	AGREE	DISAGREE	STRONGLY DISAGREE	NOT APPLICABLE	HIGHER	LOWER	
TECHNICAL QUALITY	SA	A	D	SD	NA	H	L	1. The documentation is clear and unambiguous.
	SA	A	D	SD	NA	H	L	2. Technical terms are adequately explained.
	SA	A	D	SD	NA	H	L	3. The documentation is accurate.
	SA	A	D	SD	NA	H	L	4. The documentation uses a logical, tutorial approach.
	SA	A	D	SD	NA	H	L	5. The directions are easy to follow.
	SA	A	D	SD	NA	H	L	6. Information in the documentation is consistent with the hardware.
	SA	A	D	SD	NA	H	L	7. Menus are carefully documented.
	SA	A	D	SD	NA	H	L	8. Interrelationships of menus are explained.
	SA	A	D	SD	NA	H	L	9. A comprehensive index is provided.
USE QUALITY	SA	A	D	SD	NA	H	L	10. The screen is effectively used.
	SA	A	D	SD	NA	H	L	11. Commands used are logical and easily remembered.
	SA	A	D	SD	NA	H	L	12. Corrections are easily handled at all stages of operation.
	SA	A	D	SD	NA	H	L	13. Procedures exist for escaping from all stages of operation.

	SA A D SD	NA	H L	14. Minimum time is required to move from operation to operation.
	SA A D SD	NA	H L	15. Judicious use is made of the printer.
	SA A D SD	NA	H L	16. Intended users can operate the program without unwarranted assistance.
DOCUMENTATION	SA A D SD	NA	H L	17. The program performs reliably (i.e., the result can be consistently achieved).
	SA A D SD	NA	H L	18. The program logically achieves its intended purpose.
	SA A D SD	NA	H L	19. The program appropriately uses computer capabilities.
	SA A D SD	NA	H L	20. Maximum capability is delivered at minimum cost.
	SA A D SD	NA	H L	21. Procedures used are comparable to those that business would use.

22. ______I would use or recommend use of this package. (Note suggestions for effective use in item 25.)
______I would not use or recommend this package.

23. Describe the major strengths of the software package:

24. Describe the major weaknesses:

Package Title______________________Version______________
Reviewer's Name____________________Date________________

25. Describe the potential use of the package in classroom settings. (NOTE: Complete items 1–21 before completing this item.)

Software Evaluation Form

PROGRAM TITLE

PUBLISHER/AUTHOR

COPYRIGHT

COMPUTER BRAND/MODEL

MINIMUM COMPUTER REQUIREMENTS
(e.g., "K," CASSETTE/DISK, TV/MONITOR)

PROGRAM USES
(e.g., DRILL, TUTORIAL, TESTING)

SUBJECT/TOPIC

CRITERIA	STRONG-WEAK (5 4 3 2 1)	COMMENTS
Technical Quality Warranty		
Software-Hardware Compatibility		
Ease of Use		
Flexibility in Response Patterns		
Grammar/Spelling		
Appeal-Interest		
Content Quality Educational Importance		
Factual Accuracy		
Appropriateness for Students		
Instructional Quality Appropriateness of Computer as Medium of Instruction		
Achievement of Stated Goals		
Effectiveness as Instructional Technique		
Effectiveness of Computer Feedback		

Taken from Jerry L. Patterson & Janice H. Patterson, *Putting Computer Power in Schools: A Step-by-Step Approach*. Englewood Cliffs, NJ: Prentice-Hall, 1983.

This evaluation form was developed for those who are using software within a vocational education curriculum.

Form #12

SCHOLASTIC SOFTWARE EVALUATION FORM *

I. IDENTIFICATION

A. Program Name: ______________________________

Single Program ____ Series ____

B. Distributor:

Name: ______________________________

Address: ______________________________

____

Telephone: ______________________________

C. Microcomputer

Type: ______________________________

Memory Required: ____ 16K ____ 32K ____ 48K ____ 64K

Special Language Required: ______________________________

Storage Medium: ____ Tape Cassette ____ 5" Diskette ____ Module

____ Other: ________________

Equipment Requirements: ____ One Disk Drive ____ Two Disk Drives

____ Color ____ Printer ____ Voice/Sound Instrument

____ Game Paddles ____ Other: ________________

II. INSTRUCTION

A. Grade Level

K 1 2 3 4 5 6 7 8 9 10 11 12

B. Software Types

____ Drill and Practice
____ Tutorial
____ Simulation
____ Tool
____ Diagnostic/Prescriptive
____ Management
____ Other: ________________

C. Curriculum Areas

____ Language Arts
____ Social Studies
____ The Arts
____ Business Education
____ Mathematics
____ Reading
____ Science
____ Career Education
____ Foreign Languages
____ Physical Education
____ Other: ________________

D. Instructional Considerations

____ Game Approach
____ Student Workbook Required
____ Classroom-Text Dependent
____ Teacher Supervision Required

*From MICROCOMPUTERS IN EDUCATION: A SCHOLASTIC IN-SERVICE TRAINING PROGRAM, by James Poirot and Karen Billings, Scholastic Book Services, 1982.

E. Special Characteristics

_____ Timing

_____ Branching

_____ Sound Capabilities

_____ Student Records

_____ Material Modification

F. Software Instruction Time

_____ Average Per Lesson

_____ Average Per Package

III. EVALUATION

For each criteria listed below, circle the appropriate Weight and Rating value. Multiply each Weight by each Rating to obtain a Product. Then add together the Weights and add together the Products to obtain the Total for each.

A. Presentation Criteria

	Not Important	Somewhat Important	Important	Very Important	Extremely Important	Poor	Fair	Good	Very Good	Excellent	
	Weight					Rating					Product
Ease of Use	1	2	3	4	5	1	2	3	4	5	
Reliability	1	2	3	4	5	1	2	3	4	5	
Motivation	1	2	3	4	5	1	2	3	4	5	
Frame Display	1	2	3	4	5	1	2	3	4	5	
Documentation	1	2	3	4	5	1	2	3	4	5	
	1	2	3	4	5	1	2	3	4	5	
	Total _____										Total _____

B. Content Criteria

	Weight					Rating					Product
Accuracy	1	2	3	4	5	1	2	3	4	5	
Feedback	1	2	3	4	5	1	2	3	4	5	
Level of Difficulty	1	2	3	4	5	1	2	3	4	5	
Appropriateness for Computer Use	1	2	3	4	5	1	2	3	4	5	
Educational Standards	1	2	3	4	5	1	2	3	4	5	
	1	2	3	4	5	1	2	3	4	5	
	Total _____										Total _____

To obtain an Average for Presentation Criteria, divide the Total of the Products by the total of the Weights. Repeat the process for Content Criteria. Add together the Average of Presentation Criteria and the Average of Content Criteria. Finally, divide the sum of the two Averages by **2** to obtain the Final Rating.

Presentation Criteria: Total of Products/Total of Weights = Average

_______________ / _______________ _______

Content Criteria: Total of Products/Total of Weights = Average

_______________ / _______________ _______

Final Rating: (_______________ + _______________)/2 = _______

Please note that this short form includes not only a rating scale but a weighted system which determines the final rating.

Form #13

Post-Evaluation Form

IS THE SOFTWARE USEFUL IN YOUR CLASSROOM?

Teacher's Name and Institution: ____________________
Course Title or Class Description: ____________________
Name of Software Program: ____________________
Publisher: ____________ Intended Grade Level (from manual): ______
Type of Software (check all that are appropriate):
___ Drill and Practice
___ Tutorial
___ Simulation
___ Game
___ Problem Solving
___ Other (Explain) ____________________

Enter the Menu (Put a check mark by those items evaluated on this form. There is not an expectation that you will be able to evaluate the use of all items on the menu.)

___ 1. ____________
___ 2. ____________
___ 3. ____________
___ 4. ____________
___ 5. ____________
___ 6. ____________
___ 7. ____________
___ Management Component (if available)
___ Authoring Component (if available)

(Please Check:)

Usage:
___ Remediation
___ Standard instruction
___ Enrichment
___ Reinforce
___ Introduce a new idea
___ Review
___ Motivate
___ Test or Assess

Instructional Group
___ Individual ___ Group ___ Class

Length of Time Spent on Program (measurement of attention span)

Approximate time for one sitting: ____________

Approximate time allotment to cover each component: (Be sure to include each item listed on the menu at the top of the page.):

MENU ITEM	LENGTH OF TIME SPENT Student 1	 Student 2	 Student 3
1.			
2.			
3.			
4.			
5.			
6.			
7.			

MANAGEMENT FOR EACH STUDENT ____________________
AUTHORING FOR ONE LESSON ____________________

Evaluating Classroom Use

The following information will be avilable to other teachers who are considering use of this program in their classroom..(Use this section to let the reader know what instructional tasks you completed before, during and after using the software.)

Teacher Involvement
Preparation:

Usage (please include whether a tutor was necessary):

Summary:

Student Involvement (Use this section to describe how the student responded to the software.)

STUDENT 1 Reading/Grade Level (from student file):____
Preparation:

Usage:

Summary:

STUDENT 2 Reading/Grade Level (from student file):____
Preparation:

Usage:

Summary:

STUDENT 3 Reading/Grade Level (from student file):____
Preparation:

Usage:

Summary:

Is there a particular type of student that can use this software more effectively?

Check all appropriate answers:
___ ESL
___ Special Education
___ Low Functioning
___ Low Motivation
___ Other: ______________________________

Can you anticipate the type of student who would not be able to use this software?

Check all appropriate answers:
___ ESL
___ Special Education
___ Low Functioning
___ Low Motivation
___ Other: ______________________________

Should we order more copies of the software? ___Yes ___No
If yes, how many more for your institution? _______

ADDITIONAL COMMENTS:

Please return to your Education Director when completed. It will then be forwarded to Judy Rodenstein. Thank you for your cooperation.

Used in the Division of Corrections, State of Wisconsin when software was evaluated while being used by a student to determine the true value of the software with this population.

EPIE Institute

Form #14

RECOMMENDATIONS FOR PURCHASE & USE FORM

Title: ____________________

Producer: ____________________

Address: ____________________

Price: ____________ Version Ordered ____________

Copyable: ____________ Networkable ____________

Purchase

[ ] Not recommended for purchase (not acceptable)

Major reason(s) for non-purchase: ____________________

____

____

[ ] Recommended for future purchase (acceptable, but not high priority)

[ ] Recommended for immediate purchase

Major reason(s) for purchase: ____________________

____

Use

Curriculum Area(s): ____________________

Content Topic(s): ____________________

Instructional Objective(s): ____________________

Specific Suggestions for Student Use: ____________________

____

Teacher Preparation Time & Follow Up: ______________________________

Specific Strengths: ______________________________

____

Potential Weaknesses, Problems: ______________________________

____

____

This form is used after the software has been evaluated and selected for purchase. The form was developed and copyrighted by the EPIE Institute, P.O. Box 246, Dresden, Maine 04342. Contact them for information and permission to use the form.

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COURSEWARE POST-USE FEEDBACK FORM

Title: ______
Producer: ______
Teacher: ______
Class (describe): ______
School: ______

1. Courseware subject and topic emphasis was appropriate for curriculum:

   Yes _____ No _____

2. Recommended planning and follow-up was:

   Minimal ______
   Just right ______
   Excessive ______

3. Students found the program:
   (Based on: Teachers Judgement _____, Student Response Form _____)

   Too difficult ______
   Just right ______
   Too easy ______

4. I used this courseware for the following purpose: ______

5. Tips to other teachers using this courseware: ______

6. Major advantages of the program: ______

7. Major disadvantages of the program:____

8. Recommendations for future use:____

9. Other comments:____

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EPIE Institute

Form #16

STUDENT RESPONSE FORM

Name: ______________________ Age: ______ Grade: ______ Date: ______

Program Title: ______________________ Lesson or Level Use: __________

1. How many different educational microcomputer programs have you worked with prior to this program: (circle one) 0 1-2 3-4 5-7 8 or more

2. Did you work through the entire program: YES NO

3. How long did you spend on the program? _____ minutes

4. What did the program try to teach? ______________________________

____

____

5. After each statement, check ( ) if you agree or disagree:

		AGREE (YES)	DISAGREE (NO)
a. I'd like to do this program again.	a.	_____	_____
b. I think this program was too hard.	b.	_____	_____
c. The pictures (graphics) were helpful.	c.	_____	_____
d. I got lost in this program and didn't know what to do.	d.	_____	_____
e. I really had to think in order to get the right answer.	e.	_____	_____
f. This program helped me when I made a mistake	f.	_____	_____
g. I got all the questions right on the first try.	g.	_____	_____
h. Compared to the other times I have studied this subject, this program was fantastic.	h.	_____	_____
i. I would rather work on this program by myself than with other classmates.	i.	_____	_____
j. I would like to be graded by my teacher on the work I did with this program.	j.	_____	_____
k. If I could, I would take this program home to use it.	k.	_____	_____
l. I would rather do this program with a classmate than by myself.	l.	_____	_____
m. This program was a waste of my time.	m.	_____	_____
n. This program was too long.	n.	_____	_____

o. I think my friends would enjoy this program. o. ____ ____

p. I could not do this program without help from my teacher. p. ____ ____

q. This program was too easy for me. q. ____ ____

r. This program is better for students in lower grades. r. ____ ____

s. This program is better for students in higher grades. s. ____ ____

6. What would you change about this program to make it better?

____

____

____

____

7. Overall, on a scale of "0" (lowest) to "100" (highest), I rate this microcomputer program as: ________

This form is supposed to be completed by a student after he/she has used the program in the classroom. The form was developed and copyrighted by the EPIE Institute, P.O. Box 246, Dresden, Maine 04342. Contact them for information and permission to use the form.

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Form #17

POST-EVALUATION FORM

The Computing Teacher May 1985 19

EDUCATIONAL SOFTWARE—CLASSROOM USE ANALYSIS

DATE ______________

SIGNATURE ______________

1. CLASSIFICATION

NAME OF PROGRAM ______________

PUBLISHER ______________

AVAILABLE FROM ______________ FOR ______________

SPECIAL EQUIPMENT ______________

2. SPECIFICATION

SUBJECT AREA ______________ GRADE LEVEL ______________

SPECIFIED TOPIC ______________

TYPE:

- ☐ DRILL & PRACTICE
- ☐ TUTORIAL
- ☐ SIMULATION
- ☐ GAME
- ☐ PROBLEM SOLVING
- ☐ SKILL BUILDER
- ☐ OTHER ______________

MENU: (title and mnemonic)

1. ______________
2. ______________
3. ______________
4. ______________
5. ______________

MANAGEMENT ______________

RECORDKEEPING ______________

COMMENTS: ______________

3. LESSON/UNIT INVOLVEMENT

USAGE:

- ☐ REMEDIATION
- ☐ STANDARD INSTRUCTION
- ☐ ENRICHMENT

UNIT: ______________

LESSON: ______________

PURPOSE:

- ☐ INTRODUCE
- ☐ REVIEW
- ☐ MOTIVATE
- ☐ REINFORCE
- ☐ TEST

CLASSROOM MANAGEMENT:

MUST DISK REMAIN IN DRIVE TO USE? ☐ YES ☐ NO

☐ INDIVIDUAL ☐ GROUP ☐ CLASS

☐ SIGN-UP SHEET ☐ ASSIGNMENT

TIME ALLOTMENT PER RUN ______________

TOTAL TIME ALLOTTED ______________

4. TEACHER INVOLVEMENT

PREPARATION: ______________

USAGE: ______________

SUMMARY: ______________

5. STUDENT INVOLVEMENT

PREPARATION: ______________

USAGE: ______________

SUMMARY: ______________

This form is completed in the classroom after the software has been used by the student.

REFERENCES

REFERENCES

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